The Transition of Urban Growth in China

A Case study of
the Shenzhen Special Economic Zone

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ABSTRACT

The Chinese government announced new economic reform policies in December of 1978. The announcement included an urban distribution policy that emphasized small cities and towns for rural urbanization as a means to achieve modernization in China. This distribution policy called for limited development in large metropolitan areas, selective development of only a few medium-sized cities, and more development in small cities and towns. Until now, the urbanization and development of small cities and towns have been the most dramatic changes; however, the issue is how a small city can grow in a proper way, fitting to its geographical, social and economical development requirements.

Studying the urbanization and development of the Special Economic Zone (SEZ) in Shenzhen, one of the largest SEZ in China, provides a valuable model. The transformation of Shenzhen from a small town to a large commercial city involves much rural and urban development and construction. Good urban structure and urban growth pattern is essential in providing the necessary, orderly and functional physical environment.

This thesis focuses on the evolution of a new kind of urban growth pattern for small cities and towns in China. It seeks to demonstrate that transition of urban growth pattern in Shenzhen is ideologically based in favor of socialistic setting in China. The specific goals of this study are to identify and describe the pattern of systematic urban growth in recent decades in Shenzhen SEZ, to explain the main factors and features in urban growth pattern for small cities and towns, and to evaluate recent policies of urban growth.

Thesis Supervisor: Michael Dennis
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——— *For my parents.*

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Introduction

The transition of urban growth in China may be attributed to factors somewhat different from those found in other developing urban systems. Such factors include the large area of the country, the distinctive developmental history and civilization, and the impact of foreign intrusion in the nineteenth and twentieth centuries. The recent rise of Communism with derivative urban policies has also been of major significance. However, the dramatic transition in urban growth pattern in China initiated in 1978 when the second wave of foreign influence was introduced. With this influence, the traditional urban growth pattern no longer match the rapid urban development. As a result, the new urban growth pattern and theory for developing cities in China was developed.

Historically, China has had a long urban experience with patterns of Chinese urbanization and urbanism. Urban growth for Chinese cities totally relied on the self-sufficient economic system and the intention of the Chinese authority. Applying an isolated policy for thousands of years, urban growth pattern in China was influenced by traditional Chinese culture. This situation had lasted until 1840 when the Chinese door was first opened by foreigners.

The century after 1840 was a period in which foreign powers deeply influenced not only the urban process, but also the growth trends of the Chinese settlement system, the spatial layout of the treaty ports, and the perception of the Chinese leaders as to the role of the cities in their revolutionary endeavors. The general characteristics of the impact of the West on China's political and economic systems are well known.

One major development in the history of urban growth in China was the opening of treaty ports after 1840. Most of the contemporary large Chinese cities were at one time treaty ports. The significance of these port cities goes far beyond the boundaries of the small urban enclaves where Westerners conducted their trade. It was in these cities that China had a first-hand involvement and sustained contact with Western institutions. These cities, particularly those along the coast, were centers of active change. As a result, the Chinese cities were ultimately led to the establishment of a new urban growth pattern with the Western model.

Since 1949, foreign control and influence was eliminated and the anti-urban policy had been applied. The communist ideal of the cities serving the country as a whole, and properly supporting rather than challenging the state and its orthodoxy, is well founded in a long Chinese tradition. And part of that tradition includes the role of the countryside as a base for correcting the exploitations of the city. The communist government, in giving social meaning to the coastal cities, has strengthened their materialistic and technological bases and allowed them to develop according to planned objectives. They have, however, never been able to develop to their full potential as gateways to external trade, instead, concentrating, on the domestic market. The severe restriction on foreign trade and technological cooperation can be ascribed to the many political twists and turns which are all inimical to the development of China's coastal cities. It was not until the early 80's that this situation changed dramatically when foreign influence once again welcomed the acceleration of the urbanization in China.

Further transition for urban growth in China is undergoing. Since 1978 China has adopted an open policy. By the adoption of certain measures, the open policy encourages the inflow of foreign investment, advanced technology, and management techniques. It transforms traditional methods of production, develops an externally oriented economy, and expands foreign trade. Infusion of capital and technology, combined with plentiful local labor and other resources, is an effective way of accelerating the urban development and growth.

The open policy has progressively drawn more areas of China into this reform experiment, especially, those in the coastal region. The adoption of this new style of development makes not only a radical departure from adherence to self-reliance rooted in socialism, but also a spatial redistribution of development effects from the interior to the coast. The new development strategies have been assessed as a means of spatial redeployment with renewed emphasis on the coastal region and on its geographical endowments. In the process of accelerated development, the urban pattern of the Shenzhen Special Economic Zone (SEZ) has been considered a successful model for urban development and growth in applying the foreign concepts in the socialism China environment.

This thesis first gives a fairly comprehensive description of the way in which Chinese cities are organized and of the nature of the urban growth patterns that have emerged

within this form of organization. In providing this descriptive overview, it attempts to assess the distinctiveness of China's urban patterns.

Another set of issues that it addresses concerns the relationship between urban policy and urban development and growth. Transition of urban growth in China has been paralleled with the economic policy reform and development. The years of the socialist economic system clearly demonstrated how cities might be reorganized and the pitfalls for urban growth under this traditional urban policy. Recently, the Chinese leadership self-consciously turned against many of the economic policies they had applied before and tried to create urban growth patterns of their own. In so doing, they provided a new test of whether alternatives of building socialism could avoid some of the pitfalls of the past and accelerate the transition of urban growth.

The third part of this thesis is to illustrate the transition with the model of the Shenzhen SEZ. It mainly focuses on the examination of the urban policy and urban growth pattern of the Shenzhen SEZ, which have been identified as the model of urban growth under the new reformed economic system in China. Since 1978, the city has experienced greater expansions and more rapid changes in its internal spatial and functional structures and in its external relationships with both domestic and international developed centers. From the prospective of urban development, Shenzhen is considered a good model of urban growth pattern for small rapidly developing cities, especially for the coastal cities in China.

To be sure, there are still problems and challenges which confront planners and policymakers in resolving the conflicts between economic modernization and urban growth. But with the rectification of these inadequacies and continued improvement of the policy reform and investment environment, the Shenzhen SEZ does present a sanguine prospect for future growth and development.

1 Traditional Urban Growth Patterns in China

Traditional urban growth in China has been influenced by mainly two factors. One factor is primarily the imperial authority during the process of urban pattern and development, and the other is foreign influence. During the ancient times, especially since the rise of the imperial system in the third century B.C., Chinese cities were mainly the centers of imperial authority and symbolic monuments of the power of Chinese culture. The foreign influence has not come into play until the middle of the nineteenth century.

The following section analyzes the historical urban growth pattern in China and focuses on the implementation of each factor on urban growth patterns in the different periods, followed by the current urban growth pattern and development trends.

1.1 Traditional Urban Pattern and Chinese Culture

Having the longest history in the world, urban cities in China have been a highly developed system. Traditional cities were highly organized, managed, and planned in detail. Since all decisions on urban cities from planning to development were made by the authority, all cities in the ancient times in China were developed in similar urban patterns.

Traditionally, all of the cities composed walls, which were in a regular and consistent pattern, with great gates at each of the important points of the compass. Usually a broad and straight avenue runs from one gate to the opposite one. The center of the city, usually at the intersection of the grid system, was the place for a drum tower, a plaza, a cluster of official buildings, or a religious temple. The major streets divided the city into many districts. Each district had its own specific function such as commercial, retail, manufacture or administrative offices (Figure 1)[1].

This urban pattern was dominated mainly by the Chinese culture. Primarily the city walls, even though for defense in troubled times, were symbols of the state-imperial authority and designed as part of the imperial urban plan to emphasize the city's role of power and control. The streets width exceeded the current practical use. Moreover, most cities were founded explicitly by the state as centers of imperial control and the adminis-

1. G. William Skinner, *The city in late imperial China* (Stanford University Press, 1977), page 58.

cities were founded explicitly by the state as centers of imperial control and the administration was responsible for the management of the entire surrounding areas.

Because of this functional arrangement for the cities, the urban growth pattern of the cities in China was unique. The urban centers for authority use was highly emphasized and developed accordingly during the development process. The urban growth pattern began from this urban center, gradually extended to the other areas around it. With the very low rate of economic development and the increase of the population, it took a long time, usually over hundreds or thousands of years, for a small town to grow into a huge urban city (Figure 2).[1]

With the self-sufficient economic system in ancient China, there was little or no interaction with other countries. The traditional urban growth pattern had not been affected by any factors from the outside world. This situation lasted in China for several thousands of years until the middle of the nineteenth century when the British first opened the Chinese door. Since then, Chinese culture and economic system was strongly influenced by the Western system and the urban growth pattern in China could no longer be isolated from this influence which involved some important changes.

1.2 Foreign Influence on Urban Pattern

Foreign influences on the urban growth pattern in China caused a turning point in the process of modern urbanization in contemporary history. Because of the geography advantages, the cities along the east coast areas were favorably affected.

Since the signing of the Treaty of Nanjing in 1842 to end the so-called Opium War between China and Britain, foreigners were free to occupy and control some trading bases on the coastal cities in China, until the end of the treaty as a consequence of the Second World War.[2] Several of these bases grew to become major cities which still exist in China, like Shanghai. Their major growth owed to the period when they were under foreign management and benefitted from foreign investments in cities such as Shanghai, Qingdao and

1. Nancy Shatzman Steinhardt *Chinese imperial city planning* (University of Hawaii Press, 1990), p. 23.
2. Rhoads Murphey, *City and Country in China's Development* (Methuen, Inc., 1980), p. 25.

Nanjing. About a hundred Chinese cities became more superior than other cities.

These cities had become the model of urbanization for other Chinese cities. Some of them were new such as Qingdao and Hong Kong, while others were built with the foundation of an existing Chinese city, such as Shanghai and others. Yet all of them represented something new to the Chinese experience, since they were mainly the replicas of the modern Western commercial and industrial city. The introduction of the institutions of banking, insurance and telecommunications as well as the protection of impersonal law over private property and the accumulation of private wealth were new concepts and ideas which significantly stirred the individual's incentive to be involved in the economic development. Consequently, rapid economic development sped up the urban growth.

As a result, urbanization no longer followed the traditional urban growth pattern, the urban growth patterns after 1840 mostly based on city's geographical features, economical factors and other social elements. Thus, the traditional urban elements were ignored. The rigid grid system and the city wall as well as the square size of the city site was no longer firmly utilized for the newly developed cities in China. Western urbanization was prominently displayed in the east coast cities which set the initial urbanization model with a new style (Figure 3).[1]

This influence was positive for its demonstration of urbanization power, but it was bitterly negative for Chinese culture. The cities never built effective ties with the vast hinterland of China. Sometimes, their commercial and industrial success were regarded as the invasion because it was more beneficial to the West than to China.

However, this kind of attitude have been changed recently. The capital investment and high technology introduction from the foreign counties have brought about great success for the economic development in China, especially for towns and small cities. The concentration of the urban development has shifted from the developed large urban cities to the developing town and small cities. It is expected that this new urban growth trend will continue in China.

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1. Wu, Ye, and Zhou, *Qingdao: From Colonial Port to Export Base* (University of Hawaii Press, 1990), p. 96.

1.3 Recent Urban Growth Trend

The recent rapid economic development favors small towns and cities more than large cities. The too rapid growth of big cities brings many problems related to housing, employment and infrastructure. The concentration of both population and industrial activity in big cities has aggravated shortages of land, water, energy and transportation facilities. On the other hand, the smaller cities and towns have enough land provided for both industrial and residential expansion. A major urban expansion, therefore, involved the development of towns and small cities in China (Table 1)[1].

Table 1: Changes in Urban Places, 1982-1986

Cities' Size (population)	1982	1984	1986
2 million & over	13	13	13
1-2 million	25	37	49
500,000 -1 million	47	75	99
Under 500,000	154	170	186
Cities	239	295	374
Towns	2,800	7,280	N/A

The data in Table 1 indicates that the size of the largest cities had been controlled, while the major change was the increase of the number of cities with population size under 2 million, especially those under 1 million people.

The urban growth pattern for these small cities, rather than dominated by Chinese culture expressed by the urban pattern which highlighted consolidation of the power of the authority with the city wall and rigid grid system, began to match the economic development. Moreover, the recent rapid economic development favors most small cities and towns because of the flexibility of land provision and infrastructure development. It is expected that the concentration of the urban growth will continue in small cities and towns in the coming decades.

1. Sidney Goldstein, Alice Goldstein, *Town and City* (M. E. Sharpe, Inc., 1990), p. 25.

2 Transition of Traditional Economic Policy and Urbanization

Since a city is a regional space with economic factors joined highly with concentration and coordination, urbanization in a city involves restructuring all economic factors such as population, labor, capital and resources, which are mainly in response to the needs of advanced urban development. The innovation for starting and maintaining this urbanization process derives from economic necessity. Instead of just a process parallel to economic development, urbanization is the essence of economic development.

This section is mainly to analyze the transition of urbanization process due to the change of urbanization policies in China. It starts with a wider view of the problems of urbanization under the traditional economic system, followed by the influence of the reformed economic system on the urban growth, and finally the further transition of urban growth under the innovated economic system is predicted.

2.1 Problems of Urbanization under Traditional Economic System

The Organization of Chinese Urbanization

Urbanization as a restructuring of economic factors in space in China is expressed in an organizational processes which is different from others. In the Western capitalist countries, urbanization is expressed in the market organizational process under market economic systems. Urbanization under this organization is that the premises are free movement and free combination of all resources. The direction of movement, the scale of agglomeration and the tendency of dispersal are all caused and regulated by market forces, with pricing mechanisms playing a dominant role. However, the planned organizational process under planned economic systems is applied in China. Planned process excludes market forces, economic structures and spatial patterns are determined by the state, with restructuring of resources carried out by administrative measures.

The traditional Chinese economic system has been centralized. The state has held the decision-making power over almost all economic development process. It has produced a list of goods to be produced and formulated the future economic structure and its

spatial pattern. Because the state has controlled enterprises with directive plans, using centralized collection and allocation resources, China's structural transformation has been carried out almost completely by excluding market forces. Consequently, the orientation and the transformation have been determined by the government with its fixed pace, scale and spatial pattern formulated by plan, which have had adverse effects on cities' urbanization and development. It is this organizational process that determines some characteristics of Chinese cities.

Characteristics of Chinese Cities

Because of its planned economic system, Chinese urbanization displays some peculiar characteristics. The urbanization and urban growth pattern under this economic system was characterized differently from the market organizational process.

One characteristic is that the administrative transfer of funds for industrialization was the primary motivation of urbanization. During the initial stage of urbanization, the development funds for urban industry was drawn from the agricultural sector. As a result, the gap between the rural and urban become larger and larger.

Another characteristic is the control of migration of rural people to cities. Based on the demand of the industrial sectors, the government transfers rural labor into cities only according to plans. To control rural-urban migration, the urban Household Registration System and Rationing System provided food and grain only to people officially registered as city residents.[1] Because the transformation of Chinese rural dwellers into urban dwellers was firmly organized by the state, the urban growth has been firmly controlled.

Finally, there are severe fluctuations in the urbanization process. In the market organization process, structural adjustment is carried out by temporary or gradual changes. In the Chinese traditional planned organizational process, structural adjustment involved centralized change and was often abrupt. Because planned systems lose the advantage of promptly matching market adjustments, that information on whether the economic structure was balanced was not provided in time. Thus, it was difficult for the government to decide on structural adjustment or the amount of resources needed, and the urbanization process cannot be proceed properly.

1. Cheng Xuan, *Problems of Urbanization* (Hong Kong University Press, 1987), p. 68.

The Problems of Traditional Urbanization

Under the planned economic system in China, the problems of urbanization for small cities was mainly reflected by urban-rural relations, economic efficiency and other social consequences. Because the normal process of structural transformation is that the urban industrial system grows out of the traditional rural economy, it creates simultaneously a large demand for rural labor and agricultural products, and in return stimulates agricultural production. As a result, the process increases agricultural accumulation and, at the same time, it offers a market for urban industrial products. While the agricultural production is raised sufficiently, the surplus rural labor can be continuously absorbed by the urban economy. However, the traditional system and policy prohibited this rural-urban relations.The policy of segregating urban and rural areas in China weakens the city's influence on rural urbanization.

Under this system, supply-demand contradictions in urban employment emerged. Traditional Chinese cities were unable to absorb the potential urban labor force since the government practiced a policy that centralized allocation of urban work by sacrificing economic efficiency to solve the demand-supply contradiction in urban employment. In addition, the policy of forbidding the rural population to move to cities to seek employment further strengthens the contradiction in employment demand and supply. Without competition from rural laborers, the urban unemployed can safely wait for better jobs which the government will sooner or later provide. This bitterly deferred the pace of urbanization and further development.

Under the planned system, the limited capital for urban construction is dispersed to the administrative agencies of urban construction for their specific purposes. United construction of urban infrastructure is impossible owing to its individual nature and the low efficiency of capital utilization. A typical example is that streets recently built by the municipal engineering department are dug up by the electricity department because electric cables have not been laid; then the streets are opened up again by the telecommunication department. The failure to coordinate is due to each department being responsible for only its own projects and has its own annual plan for capital expenditure.

Urbanization processes in China reflect the defects of the traditional system. The problems of Chinese urbanization are the question of efficiency in the modernization of

the national economic structure. The root of the problem is the absence of market adjustment system under the traditional system and the loss of important information on structural adjustment for the state controlled economic system.

2.2 Influence of Economic Reforms on Urbanization

Prior to 1978, Chinese policy under the traditional system aimed mainly at two urban goals: to control the growth of all cities and to keep it within smaller boundaries when growth occurred. After 1978, some of the more restrictive urban policies were relaxed. The small cities and towns are allowed to grow in response to market forces without central government intervention. Because of this policy, the new market and administrative methods to direct urban growth for the towns and small cities are provided and have greatly accelerated the urban growth in China.

Administrative Control and Urbanization Policy

Urban growth control in China started to weaken in the 1978 policy, especially for towns and small cities. The rapid economic growth encouraged more people to move into towns and cities because many construction projects needed laborers, the adopted temporary residence measures allow villagers to gain temporary registration in towns and cities. Moreover, the post-1978 policy added the possibility that some cities could have greater autonomy in approving foreign investments. As a result, numerous previously rural counties rushed to get approval as cities such as Shenzhen and Dongguan which are just north of Hong Kong.

Compared with the previous limitations, more emphasis was given to the employment structure and economic development for the small cities and towns. In order to encourage further development, the policy specified that town should be granted city status if it meet the a number of special criteria[1] which includes: places with a concentration of minority groups, places located in frontier regions, important industrial, mining, and research bases, famous scenic areas, transport junctions, and coastal ports; counties of less

1. Anthony Gar-on Ye, *Changes in City Size and Regional Distribution (Hong Kong University Press 1987)*, p. 48.

than 500,000 population but with a county seat of more than 100,000 nonagricultural population, less than 40% of its registered, permanent residents in agriculture, and an annual total value of output in excess of $300 million yuan; counties with more than 500,000 people in which the annual total value of output is over $400 million yuan; capitals of autonomous (i.e., minority group) provinces, even when they are below the normal population and production criteria.

All these criteria were much more liberal than in earlier years. The new flexible urban policy encourages the transformation of urban growth pattern from a rural town to a urban city. The urbanization and development during this process can be carried out in a relative short amount of time.

Effects of the Reformed Policy on Urbanization

Since 1981, urban economic structural reform has successively introduced in many coast areas such as Shenzhen, Xiamen and Dalian. Since 1984, the main point of economic reform has shifted to small cities and towns. The reform remains to open the market and get rid of the stubborn principles and remedy the defects of excessive concentration of power under the traditional system. These changes have influenced urbanization greatly.

After over ten years of reform, it is recognized that deficiencies in the urbanization process have been gradually overcome and things are headed in a positive direction. The differences between urban and rural areas have been narrowed. Agricultural production is increasingly traded according to the free market criteria, and the concept of commodity economy has been strengthened. The rural economy is being transformed from a natural economy to commodity economy.

On the other hand, surplus labor from the agricultural sector can switch their occupations and enter into different kinds of enterprises in towns and cities. During the initial period of 1979-1985, 45 million agricultural laborers switched to non-agricultural jobs[1], which indicated that peasants have actively taken part in the structural transformation of the national economy.

Finally, the concept of exchange value is being gradually adopted. Fees for urban infrastructure, the commercialization of housing stock, and the use of land have been

1. Xu Xueqiang, *Chinese Urban Reform* (Hong Kong University Press,1990), p. 76.

gradually introduced in many Chinese cities.

The commodity economy policy weakens the traditional system which deeply entrenched on the cities, and the steady and thorough economic reform has caused rapid progress on urbanization in China. With further employment of the open policy and reformed economic system, the new direction in Chinese urban growth has been formed.

2.3 New Direction in Chinese Urban Growth

Because the reformed economic system favors the growth of small towns and cities, the most dramatic changes for the rapid growth of small cities in China has already achieved considerable success in meeting its goal of modernization by increasing the number of small towns and cities: 7280 towns were reported by the end of 1984, a virtual tripling over the 2,664 enumerated in the 1982 census. The cities grew from 239 in 1982 to 347 in 1986.[1]

Continued urban growth is expected. However, small towns and cities in China are at the crossroads to reassess the new direction for urban development strategies. On the one hand, because the commodity economy is weaker and the traditional system more deeply entrenched on the cities, the progress of reform on urbanization could cause some conflicts and confrontations. This reflects the sharp opposition between the old and new economic systems.

On the other hand, the desire to create a better urban environment is clear, but the spatial concepts and strategies which must be used for urban growth have yet to be developed. While national development at the present follows the general direction of cautious adaptation of foreign economic system and technology, the desire to absorb foreign ideas is likely to influence the urban development strategies in the future. It is more realistic that these ideas are derived from those already existing in China and those being developed in recent years. From this perspective, the urbanization and development of the Shenzhen Special Economic Zone provides a good model in China.

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1. Sidney Goldstein and Alice Goldstein, *Town and City In China* (Hong Kong University Press, 1990), p. 18.

3 Shenzhen: Strategies for the Transition of Urban Growth

Shenzhen's urban growth from a small frontier town to the largest Special Economic Zone (SEZ) in China is the outcome of planned development under the open policy. This transition of urban growth under the reformed urbanization policy has never seen before in China, and the Shenzhen's experience is not only a case for innovative measures in urban and economic growth for a socialist China, but also a guide for further urbanization and development for other developing cities.

This section is a case analysis of the transition of the urban growth in the Shenzhen Special Economic Zone. It mainly focuses on such aspects as the setting, economic transformation, urbanization and development under the reformed economic system that influence the urban growth pattern, by which to illustrate that the urban growth pattern in Shenzhen is a good model for the developing cities in China.

3.1 The Setting

3.1.1 Historical Urban Perspective

Settlement of Shenzhen was slow in early times. It was not until the Ming Dynasty that more people began to settle in this area which was considered by the authority to be strategically important for fortification. Consequently, a walled-garrison town was established to secure the area (Fig. 4)[1]. Even though it started its urbanization several hundreds of years ago, it had still been a very small town by the late 70's due to the traditional urbanization policy and isolation from out world.

Because of the larger area of potentially cultivable land, the larger part of its population eventually concentrated. Before the end of last century, Nantou was the major political and economic center of the area. Because of the location importance of the area with the outside world, Bao'an Xian was further recognized in 1979 when the area was given the status of special municipality directly under the provincial government of Guangdong.

1. Kwan Yiu Wong, *Shenzhen Special Economic Zone* (Hong Kong Geographical Association, 1982), p. 36.

Creation of the special economic zone in the municipality has given this area a more distinctive advantage for attracting outside capital and skills to assist its urbanization and development.

In spite of its proximity to Hong Kong, the municipality remains very much rural as market towns serving the basic need for the adjoining villages (Fig. 5). Nantou, served as the regional market center for the west part of the area, Shenzhen Town served similar functions for the south-central part of the area. The settlement here are largely due to its geographical features, which plays an important role to determine the urban structure in the Shenzhen SEZ.

3.1.2 Physical Geography

The location of Shenzhen is in the southern part of Guangdong Province, adjoining the New Territories of Hong Kong. To the west of Shenzhen is the Zhu Jiang Kou and to its north are Huiyang and Dongguan. It measures 88 km from east to west and 43 km from north to south, with a total area of about 2,020 sq km (Fig. 6 and 7)[1]. Geographical proximity to Hong Kong has provided Shenzhen with an unique advantage over other parts of China.

The significance of this geographical feature is that, over the years, the large part of the total investment in the Shenzhen SEZ has come from Hong Kong and has undoubtedly contributed tremendously to Shenzhen's rapid development. It is clear that Shenzhen's location advantages in close proximity to Hong Kong will continue to play a crucial role in the future development of the city.

The topographical features here are equally important. Shenzhen is mainly confined by the water bodies and mountains in this area. Streams in the eastern portion of the SEZ flow into Dapeng Bay whereas those in the central and western portions flow into Shenzhen Bay. Of these streams, the longest one is Shenzhen River which forms the political boundary between China and Hong Kong. In addition, there are nine reservoirs within SEZ with various sizes which provide people with water and resort sites (Fig. 8)[2]. All

1. David K. Y. Chu, *Modernization in China* (Hong Kong Geographical Association, 1982), p. 7.
2. Kwan Yiu Wong, *Shenzhen Special Economic Zone* (Oxford University Press, 1985), p. 17.

these natural resources are a solid foundation for the rapid industry urbanization and agricultural development in the past as well as in the future.

The coast line in Shenzhen is formed by two water bays. Shenzhen Bay, mixing with the Pearl River, functions as both the boundary of the city and the waterway of goods export and import. It is also the main sight-seeing point in the urban city area. Whereas the Dapeng Bay to the east is deeper but fairly enclosed. Because it is far from the downtown city, it is a nice place to locate large public service facilities. These unique topographic features also determine the settlement pattern and population attribution in Shenzhen.

3.1.3 Settlement and Population

The settlement pattern of Shenzhen has been dictated by rugged topography. Most of the flat land suitable for agriculture spreads to western coastal lowland and to the valley floors. The eastern coastal lowland is narrow and offers limited economic opportunities.

The population growth in Bao'an Xian before 1982 is very low. According to the official census of 1953 which cited 203,715 inhabitants for Bao'an Xian; while in 1982 it was approximately 320,000, and about 700,000 in 1990. At that time, the population density in this area was also low compared with the adjacent areas. According to the 1953 census, the population density of Bao'an was 20.5 persons per sq. km. compared with 59.1 persons per sq km in the Dongguan area.[1] The relatively low population density of the area may be due to the hilly nature of the area.

3.2 Economic Transformation and Development

Despite Shenzhen's advantageous geographical position, the adoption of an isolated policy had negative effects on its development before 1978. Shenzhen remained a small town of 20,000 people with a weak industrial base, low agricultural and industrial production, and had no modern facilities in the city. Since the inception of the Shenzhen Special Economic Zone, considerable development has taken place which has gradually transformed the economic base from predominantly agrarian to modern industrial.

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1. Kwan Yiu Wong, *Shenzhen Special Economic Zone*, (Oxford University Press, 1985), p. 19.

3.2.1 Self-sustaining Economic Growth Before 1978

Agricultural development

Self-sustaining economic development in Shenzhen, like other parts of the southern coast areas in China, mainly focussed on agricultural development which includes two economic activities. One of them was crop farming, and the other was marine and fresh water fish culture. Of the Shenzhen's total area of 2,020 sq km, of which 623 sq km (30.8%) is arable land while about 25 sq km (1.2%) is in reservoirs and ponds for fresh water fish culture (Table 2)[1].

Table 2: Areal Distribution of Land Use Type in Shenzhen

Types of Land Use	Area (km^2)
Grassland & Scrubland	1065
Arable Land	621
Woodland	297
Reservoir & Fish Pond	25
Settlement	5
Orchard	2
Swamp	2
Sandy Area	2
Quarry	1
Total	2,020

Arable lands are located on the lower valley tracts traversing the whole region and along the coast in the west. The crops grown on the arable lands of Shenzhen are typical of those found in South China. With a year round growing season, two crops of rice are harvested each year. A variety of beans are also grown as food supplement. Winter is warm enough for the cultivation of vegetables (Fig. 9).

At the eastern end of Zhu Jiang Kou, large stretches of the Shenzhen coastal areas are mud flats suitable for the breeding of fish. But before the implication of the economic reform, a very small part of it had been developed with very outdated equipment. The pro-

1. Kwan Yiu Wong, *Shenzhen Special Economic Zone*, (Oxford University Press, 1985) p. 29.

duction rarely met the local demand. At the end of 1978, Shenzhen had only 168 hectares of aquatic ponds for fish culture, of which 134 hectares were commercially productive. However, in March 1982, this area had been expanded to 469 hectares and it was further increased to 1,372 hectares in 1984.[1]

Industrial Development

Before 1978, Shenzhen was a small town with only twenty-six small factories and a total industrial output of less than $10,000, and urban facilities were far from adequate. The industrial production was dominated by the food processing industry, followed by building materials, timber, paper, and textiles. All these industries were mainly located in the Shenzhen town area because of the population settling and shortage of infrastructure.

Since 1978, Shenzhen gradually has transferred from an agricultural based town to an industry city. The industrial development has been the most important focus for urbanization in Shenzhen. Only in 1981, 66% of the total number of investment projects in Shenzhen are connected with manufacturing. These include a wide variety of items ranging from the more basic light industries, such as textiles and clothing, electronics and light metals, to industries that require more advanced technology such as motor vehicle assembly and printing.

It is no doubt that all these changes are the outcomes of the implementation of the open policy and economic reforms. All these innovations in policy and economics made an important transformation from a traditional planned economic system to a flexible market economic system. The effects of this transformation was first tested by the introduction of a new Western concept: "Special Economic Zone".

3.2.2 Transformation: The First Special Economic Zone in China

Shenzhen's Unique Factors for Special Economic Zone

Shenzhen's geographical location is one of the important factors considered for selection as an SEZ. Shenzhen is chosen for the establishment of special economic zone in Guangdong for several obvious reasons of physical location (Figure 10)[2]:

1. Kwan Yiu Wong, *Shenzhen Special Economic Zone* (Oxford University Press, 1985), p. 32.
2. Shenzhen Construction Bureau, *The Master Plan of the Shenzhen Special Economic Zone*, 1985.

(1) Shenzhen is adjacent to Hong Kong and Macau and accessibility to the markets of the outside world is facilitated.

(2) Shenzhen is the chief origins of Hong Kong immigrants. Most of the Hong Kong businessmen and entrepreneurs speak the same dialects and maintain relations.

(3) Shenzhen has the advantage of easy access to the port facilities of Hong Kong, there is no urgent need for the construction of wharves in the initial phases of the development.

(4) Shenzhen currently facilitates and controls the flow of goods and people between these areas and the rest of China.

Considering these location advantages, Shenzhen was first selected as the test base for the new concept "Special Economic Zone" in China at the initial phase of economic reform. The essence of the Shenzhen SEZ is the word "special" which is mainly characterized by the nature of the market economic system applied in the socialism China. Since then, the implementation of open policy and economic system has begun.

3.2.3 Trends in Economic Development

The new trends in economic development in the Shenzhen SEZ cannot be predicted without consideration of the economic development in Hong Kong. Recent development in the Shenzhen SEZ have changed the city from an agriculture economy to an industrialized urban economy. This is reflected in the increasing population and in the growing industrial production relative to agriculture. The pact of this change is not contained exclusively within the Shenzhen SEZ itself, rather its influence spread not only on the hinterland, but also on their capitalist neighbors-Hong Kong.

From an economic perspective, economic development in Shenzhen and in Hong Kong should be able to complement each other. Hong Kong possesses capital and technology while Shenzhen is endowed with land and labor; cooperative utilization of these resources could benefit both parties. Hong Kong's industrial diversification has been somewhat restrained because land is insufficient and too expensive, particularly for those industries that demand a lot of space. On the other hand, Hong Kong can help Shenzhen in term of finance, marketing, materials and labor training. Thus, both places can benefit

from each other's mutual existence.

In general, the economic development in Shenzhen will continually be with a high urban growth potential. The close connection with Hong Kong will further improve the urbanization and development in Shenzhen SEZ.

3.3 Urbanization and Development in Shenzhen

After the economic transformation, a number of innovative measures for urbanization and development have been tested in Shenzhen. Under the new urban policy, the urban land use pattern was formed heavily in the economic criteria and environment consideration. Therefore, the economic sectors such as industry, agriculture and the relations between them should be properly planned.

3.3.1 Urbanization Policy and Land Use Pattern

Urbanization Policy in the Shenzhen SEZ was innovated and tested in the Shenzhen SEZ and it's experience in urbanization has been implied by other cities in China. The following measures in urbanization policy have considered as effective strategies for urbanization and development in Shenzhen.

The Use of the Foreign Investment Capital. Considering the seriously capital shortage for development, all efforts were made to create an environment for foreign investment. The efforts to reform the administrative structure, to provide the infrastructure, to develop a sound legal and financial system, to offer preferential treatment and various incentives to investors are the first step to attract a large share of foreign capital for urban development. The most parts of Luohu and Shekou districts were built with foreign capital in the early 80's.

Bonded Industrial Zones. The original formulation of Shenzhen's development and growth was based on the concept of the free zone, a concept with a variety of forms from export-processing zones to free ports or free-trade zones[1]. Shenzhen's model of

1. Kwan-yiu Wong, K.Y.Chu, "*Export Processing Zones and Special Economic Zones as Generators of Economic Development: The Asian Experience*," Geografiska Annaler 66(B) (1984): 1-16.

development, however, does not seem to fit these categories. Although it evolved from the free zone concept, the Shenzhen SEZ has developed into a unique model of its own.

In order to fit this concept into the Shenzhen SEZ, a new type of investment zone, known as the Bonded Industrial Zone (BIZ), was introduced in 1987 and put into action in 1988.[1] The Shatoujiao BIZ is the first one designed to provide an even better investment environment than SEZ. It has some unique major characteristics: goods moving directly to and from Hong Kong are duty free; all applications for investment is processed within one week by the administrative committee of the BIZ; overseas investors can recruit their own work force without permit from the Shenzhen Labor Bureau; the zone can be managed by its own regulations; and products from the zone are basically meant to be exported only. As expected, the effect of the BIZ is clear, construction work for the 200,000 square meters site started in December 1987; total investment from foreign investors is estimated to be around $40 million[2].

Contract Labors. The introduction of contract labor and a new wage system is one of the important reform policies. All workers and staff are hired on contract rather than permanently, a floating wage rate replaces the rigid system of fixed salaries. This has resulted in breaking the "iron rice bowl" and improving labor productivity.

Tender System. Another well-known innovation is the tender system in construction works. During the process, instead of only state agency, tenders are invited from all over the country and the job is awarded to the most effective construction company with the lowest cost. This became a common practice in Shenzhen as early as 1982 after being united in July 1981.

Property Right. Another praiseworthy reform is the commercialization of the housing stock and the introduction of the home purchase scheme. This is an important change from the original state as the owner of urban housing to a new attitude that workers become owner with higher wages. This practice and the changing attitude toward housing have had significant effects on the housing policy in China. Since then, housing purchase has become the main trend for people to become owner of the property.

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1. Yue-man Yeung and Xu-wei Hu, *China's Coastal Cities* (University of Hawaii Press, 1992), p. 271.
2. *South Chinese Morning Post*, 18 July 1988.

Land Transaction. The most important innovation in Shenzhen is the introduction of land sale reform which aims to make the best use of available land for development. Supplementing the former leasing system, future land transactions in Shenzhen should be through public tender, land grant, private treaty, or public auction.

These new urbanization policy has greatly encouraged the further investments and urban development in the Shenzhen SEZ. Now they are wildly accepted all over China. Fact has certified that the innovated urbanization policy is crucial for further urbanization and development in China.

Land Resources and Use

Shenzhen has abundant land resources, much of which are suitable for large-scale urban and economic development. According to estimates made by the Shenzhen government, out of the total land area of 32,750 hectares in the Shenzhen SEZ, about one-third (that is 11,000 hectares) is capable of supporting sizable development and construction (Table 3)[1]. The continuous stretch of flat and low-lying land from the Shenzhen town to Nantou (extending from Shenzhen town westward through Shangbu, Futian, and Shahe to Shekou and Nantou) offers great potential for large-scale urban development (Figure 11)[2].

Table 3: Classification of Land in Shenzhen SEZ

Land Type	Area(hectares)	Area for Urban Development
Flat Land	7,260 (22.2%)	7,260
Built-up Area	1,740 (5.3%)	1,740
Rolling/undulating	5,730 (17.5%)	2,000
Low-lying	1,460 (4.4%)	-
Hilly	15,910 (48.6%)	-
Water Surface	650 (2.0%)	-
Total	32,750 (100%)	11,000

Outside this area, Shenzhen's other land resources provide opportunities for a var-

1. Wang and Chu, *Modernization in China* (Oxford University Press, 1985), p. 198
2. Kwan Yiu Wong, *Shenzhen Special Economic Zone*, (Oxford University Press, 1985) p. 62

ity of other uses. The rolling, hilly regions in the north and east are of great scenic beauty which favor the development of tourist or holiday resorts. Outside the SEZ, the large agricultural land in Bao'an county are suitable for farming. In general, these abundant land resources constitute the basis for a balanced proportion of urban development.

The Shenzhen SEZ has a total area of 202,000 hectares, of which 32,750 hectares have been designated as the SEZ. The usable land areas are not evenly distributed throughout the Shenzhen SEZ (Figure 12). The northern and eastern sections are rather hilly with only a few coastal plains suitable for urban development. However, towards the west, there is an almost continuous stretch of flat and low-lying land extending from Shenzhen Town westwards through Shangbu, Futian and Shekou to Nantou, which provide great potential for large scale urban development.

3.3.2 Industrial Urbanization: Location and Structure

Industrial Location

The areas of industrial development in the Shenzhen SEZ can generally be classified into three broad regions: the Shenzhen SEZ; the Shekou Industrial Zone; and industrial districts in Bao'an county (Figure 13)[1]. The former two entities belong to the SEZ section of the city and have a high degree of autonomy in dealing with foreign investment. However, as indicated before, although Shekou is physically part of the SEZ, it has gained the status of a separate zone managed by the China Merchants' System Navigation Company (CMSN) of Hong Kong. CMSN has the authority to make decisions on overseas investment in Shekou. In fact, apart from certain original existing industries in Luohu and Shenzhen town, Shekou is the first industrial district in Shenzhen to be developed systematically.

Industrial districts in Bao'an county have a certain degree of flexibility to offer preferential treatment to firms setting up in the districts adjacent to but outside the SEZ. Thus, although their interior infrastructure is inferior compared with SEZ areas, districts such as Shajing, Pinghu, Buji and Henggang have all been planned as comprehensive industrial districts spread industrial development more evenly throughout the city.

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1. Han-Xin Chen, *Shenzhen: Special Experience in Development and Innovation*, p. 281.

Active industrial location, however, is still concentrated largely within the SEZ, particularly in the central and western sections from Shenzhen town to Nantou. Topography, accessibility and infrastructure are the main factors accounted for this location pattern. The most intensively developed areas are now in Shekou, Shahe, Shangbu and Bagualing (Figure 13). Other districts planned for comprehensive industrial development include Nantou and Futian, all situated in the western part of the city. Aside from these districts, there are also a few old industrial centers in Shenzhen which existed before the designation of the SEZ. They are located in or near the original urban areas of Luhou and Shenzhen town. Manufacturing activities in these areas are confined to small scale light industries such as arts, crafts, textile and clothing.

Industrial Structure

From the initial period of development until today, the industrial structure of Shenzhen has been heavily focused on light industrial production. A comparison (Table 4)[1] shows the predominance of light industry in the overall industrial structure in the period from 1978 to 1987. In 1978, light industry accounted for some 83 percent of the total value of manufacturing production in Shenzhen, then known as Ban'an county. Compared with the statistics for the whole of China for the same year, which was only 43.1 percent,[2] Shenzhen's percentage was very high.

This industrial structure is considered reasonable in Shenzhen for a few reasons. One of them is that China's economic development policy before 1978 placed great emphasis on heavy industrial production which resulted in the serious neglect of light industry. The other is that Shenzhen was originally a small border town whose major economic activity was agricultural production. Resources for large scale industrial development, particularly of heavy industry, were very limited.

The data shows that the share of light industry in the total value of manufacturing production in Shenzhen is about 80% since the initial development. This is a typical industrial structure in small developing cities in China. There are several factors which play a main role for this structure pattern. First of all, changes in China's economic policy

1. *Shenzhen SEZ yearbooks.*
2. S. Feuchtwang and A. Hussain, *The Chinese Economic Reforms*, (Croom Helm, 1983).

since 1978 have led to a readjustment of the economic development strategy, shifting the

Table 4: Changes in the Industrial Structure of Shenzhen: 1978-1987

Year	Light Industry (%)	Heavy Industry (%)
1978	82.9	17.1
1979	86.7	13.3
1980	83.5	16.5
1981	93.8	6.2
1982	87.9	12.1
1983	79.9	20.1
1984	81.0	19.0
1985	81.7	18.3
1986	80.8	19.2
1987	79.4	20.6

emphasis to light rather than heavy industry. Another factor is that investors were not prepared to engage in heavy industrial production that required considerable capital expenditures. On the other hand, labor-intensive light industries such as electronics found favor the cheap labor resources in the area. Finally, government paid more consideration to the interests of potential investors than to the city's needs or development goals in the initial period, as a result, a large number of small scale light industries were introduced into Shenzhen to make quick profits from a minimum amount of capital input.

With the development of the economy, the share of light industry in the total value of manufacturing production began to drop, but the percentage is still much higher than the national figure. In the coming years, it is expected that Shenzhen's industrial structure will still be dominated by light industry.

Achievements

Since the Shenzhen SEZ was originally to be developed as a comprehensive economic entity, industrial development has been given top priority. In the early period of development, most of the investment in manufacturing was confined primarily to small enterprises engaging in intermediate processing or assembly work. Since 1981, however, a

number of developments have changed the picture.

The most notable among these was the enactment of four sets of SEZ provisional regulations regarding labor and wages, entry and exit, business registration, and land administrative structure in 1981. Consequently, an increasing amount of foreign investment has entered the manufacturing sector, which has attracted the largest proportion of overseas capital. At the same time, the value of industrial production has risen to a new high level every year (Table 5)[1].

On the other hand, apart from serving as a window to import foreign capital and technology, the SEZ has established a strong linkage with the rest of the country. Enterprises in Shenzhen import and absorb high level technology from foreign firms and then diffuse this knowledge to other parts of the country.

Of course, the industrial achievements cannot be made without the assistance of the agricultural development in Shenzhen. Especially as an agricultural basis initially, the agricultural development in Shenzhen has played an important role even since the conception of the development.

Table 5: Value of Industrial Production in Shenzhen: 1979-1991

Year	Shenzhen City (million RMB)	Shenzhen SEZ (million RMB)
1979	60.61	29.66
1981	242.82	202.53
1984	1,814.51	1,474.75
1987	5,762.89	4,990.11
1991	16,130.00	N/A

3.3.3 Agricultural Land Use Pattern

Shenzhen used to be a city with the self-sufficiency economic policy for agricultural production. As the population is increasing very rapidly, which includes both permanent resident and temporary resident, the self-sufficiency is especially difficult to meet the

1. *Shenzhen SEZ Yearbook (1985-1991).*

demand requirement in Shenzhen. Because of rapid industrial development, this trend of increasing demand is expected to continue. In addition, Shenzhen is adjacent to Hong Kong, which is a huge market for agricultural production. Therefore, the agricultural land use pattern and development based on the population and future demand must be predicted properly in order to meet the further development.

A Model for Agricultural Land Use

Von Thunen's concentric ring theory for agricultural land use may be practical in Shenzhen. According to this theory, the agricultural land use is mainly in the form of four concentric rings (Figure 14)[1]. The innermost ring is labelled the Inner Suburban Zone and it is surrounded by the Outer Suburban Zone, Incorporated Counties Within Municipal Boundaries (ICWM) and Adjacent Counties Outside the Municipality (ACOM) respectively.

The position of each cropping zone corresponds with the characteristics of the various crops, the transfer ability and duration of the harvested products. Usually leafy vegetables should be grown near the city, so the Inner Suburban Zone is the most suitable area for their cultivation; the Outer Suburban Zone would be the most economical location for non-leafy vegetables and processed vegetables; the supply of grain and rice as well as oil-bearing seed for the city should be cultivated in the ICWM and the ACOM; and the sandy area, foothills and fringe area between the Inner Suburban Zone and the Outer Suburban Zone are the best places for orchards which can serve as green belts in the city.

Even though this theory is no longer used in the Western developed industrial countries, it is still relative to a developing country like China. Therefore, this theory is still important for Shenzhen because of its inadequate transportation and other facilities.

The size of Urban Agricultural Land Use Belts of Shenzhen

The above analysis describes the local characteristics of the agricultural land belts surround a city. However, it is important to ascertain the appropriate size and width of the these agricultural belts with respect to the population of the city, for this can facilitate the planned and balanced development.

1. Kwan-yiu Wong, *Modernization in China*, (Oxford University Press, 1985), p. 92.

With the target population of Shenzhen by the year 2,000 that is now fixed at 80,000 and a planned density of 10,000 people per sq km, as well as the urban areas of Shenzhen to be reserved for development is 80 sq km, the area of the Inner Suburban Zone of Shenzhen should be 100.5 sq km; the radius of this zone is estimated as 7.6 km; the Outer Suburban Zone of Shenzhen is estimated as 666.6 sq km and the radius of the Outer Suburban Zone is 16.4 km.

However, as the area of Shenzhen is limited by topographical constraints and the border with Hong Kong, the suburban agricultural belts of Shenzhen are actually a semi-concentric ring pattern. The estimated radii should be adjusted in order to give the same area. As a result, when Shenzhen is fully developed, the radii of the Inner Suburban Zone and the Outer Suburban Zone should be 10.7 km and 23.3 km respectively (Figure 15)[1].

Comparing the above theoretical factors with actual conditions in Shenzhen, the proper size of the Outer Suburban Zone for Shenzhen is 666.6 sq km which is only about half the area of Bao'an County (Figure 16). Even though the entire area of Bao'an County is obviously large, it would not be large enough to bear the whole responsibility of providing agricultural production to Shenzhen in the future. It may therefore be necessary to incorporate neighboring Dongguan and Huiyang Counties into Shenzhen in order to maintain an adequate supply.

The urbanization process in Shenzhen is sped up with the promising development of agriculture. Both rural and urban areas have been developed simultaneously even since the initial phase of the urban development. The correlated ties between the industrial and agricultural developments has considerably promoted the process of urbanization.

3.3.4 Rural and Urban Relations

As Shenzhen is rapidly transforming itself, the correlation between the urban city and the rural area has been a crucial factor to accelerate the development in both places. The rapid rural urbanization is attributed to the expansion of the city, and in turn to further the urban development of the city. This issue is examined in the aspects of rural urbanization and urban development.

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1. Tianxiang Zheng, *Agricultural land use patterns and export potential*, page 98.

Rural Urbanization

Rural urbanization in the Shenzhen SEZ is a initial stage of preparation to convert rural counties to the town status. It occurs in the Outer Suburban Zone comparing with the developed urban areas. With the expectation to speed up the development of rural areas, some development strategies were initiated in the early time. For example, production should be promoted for poultry, livestock, the dairy industry and other local subsidiary food products that are economical in the use of land and high value of output. The other is that integrated enterprises of agriculture, industry, and commerce should be developed. These enterprises will enhance the commercial value of agricultural products, reduce rural/urban and agricultural/industrial differences, and absorb excess rural labor.

These strategies have greatly promoted the rural development in the SEZ area and Bao'an county. By now, the development focus in these areas has shifted from the original agricultural production to the industrial development. From this point of view, the preparation for urbanization is finished and consequently the new phase for urban development has begun.

Urban Development

Urban development in the Shenzhen SEZ is to convert the rural town into the urban city. It occurs in the Inner Suburban Zone in Shenzhen. The pattern of the development in Shenzhen is clearly influenced by the physical factors as discussed before. Each urban center such as Shenzhen town is designated according to the characteristics of the location, which will benefit from Hong Kong and overseas and further accelerate the development of the center. With the rapid pace of urbanization, the center expanded rapidly and the rural area around the center is soon absorbed as part of the center, which further stir the rural urbanization in the out suburban zone.

Even though the urban growth of the city follows this formula, the Shenzhen SEZ did not make it in the same way as other traditional urban cities did in China. The urbanization process in Shenzhen SEZ has nearly finished in a couple of decades, while other traditional cities in China have taken several hundreds or thousands of years. Therefore, the transition of the urban growth pattern from traditional urban cities to current developing small cities and towns has been achieved in the Shenzhen SEZ.

3.4 Urban Growth Pattern in Shenzhen

The urban growth pattern in the Shenzhen SEZ is unique because of it's location and geographical features. These features plays an important role in determining the urban structure and strategies for urban development. The transformation of the urban growth during the last decade, as witnessed in its phenomenal growth in population and the expansion of various economic sectors, is a valuable experience for other developing cities in China.

3.4.1 Geographical Endowment and Urban Structure

The urban structure of Shenzhen SEZ was formed by taking into consideration the topography of the area and the geographical location of the zone in relation to Hong Kong. Topographically, the Shenzhen SEZ can be divided into a hilly area and a lowland area. The hilly region primarily occupies the northern part of the zone and the area east of the Shenzhen Reservoir. As the area is hilly and relatively inaccessible, it is not suitable for urban development; tourism is the major development planned for this area (Figure 17)[1].

Most of the lowland area lies close to the border with Hong Kong along the coastal plain of the SEZ. Because of its proximity to Hong Kong and the level topography, the lowland area is planned for urban development in industry, commerce and housing.

Geographically, the Shenzhen SEZ can be divided into three regions: eastern region, central region and western region. The geographical endowment for urban districts in each region determines their development characteristics (Table 6)[2].

The Eastern Region

Located to the east of the Shenzhen Reservoir, three districts: Shatoujiao, Yantian and Xiaomeisha are in this region. Most of them are hilly and are not suitable for large scale urban development, so the development of the eastern region emphasizes the utilization of its natural resources such as water, beaches and reservoirs.

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1. Shenzhen Construction Bureau, *The Master City Plan of the Shenzhen SEZ*, 1985.
2. Anthony G. O. Yeh, "*Physical Planning*", (Oxford University Press, 1985) p.115.

The location characteristics of each district determines that the function of each district is different. Xiaomeisha is a tourism resort with beautiful beaches along Dapeng Bay that are very close to Hong Kong, this has great potential as a weekend water sports resort for people from Hong Kong (Figure 18). Yantian is mainly involve fishery, agricul-

Table 6: Major Functions and the Population of Districts

Regions	Districts	Functions	Usable Land	Population	Density
Eastern	Shatoujiao	Commerce, Residence	260		
	Yantian	Fishery, Agriculture, Industry	578	30,000	30
	Dameisha	Tourism	172		
Central	Luohu	Commerce, Residence, Industry	200	110,000	550
	Shenzhen Town	Commerce, Residence, Industry	400	40,000	100
	Reservoir Districts	Industry	440	30,000	68
	Shanbu	Tourism, Residence	1,000	60,000	60
	Futian	Commerce, Administration	3,000	300,000	100
	Xiangmihu	Tourism	210	1,000	5
Western	Shekou	Industry, Residence	230	50,000	217
	Xili Reservoir	Tourism	300	30,000	10
	Chiwan Port	Port, Industry	500	30,000	60
	Nantou	Industry, Residence, Commerce	610	32,000	52

ture and industry as well as the cargo transfer harbor which is the major joint point for commercial trade between inland of China and Hong Kong. While Shatoujiao is the commercial and residential center of this region. Having the advantage of adjacent to Hong Kong, this district involves much commercial trade with Hong Kong (Figure 19).[1] The street, which served as the boundary between China and Hong Kong, is the major market place. The Shenzhen Reservoir, which at present supplies 30 percent of Hong Kong's water supply, has been developed into a park for recreation.

The Central Region

The central region is bounded by the Shenzhen Reservoir in the east and approximately by Chegongmiao in the west. Major urban districts of the region include Shenzhen Town, Luohu, Shangbu and Futian. Because of its central location in the urban structure, it

1. Shenzhen Construction Bureau, *Master City Planning of the Shenzhen SEZ*, 1985.

will still be the major focus of urban development in the immediate future.

The vast coastal plain of the central region provides ample opportunities for urban development. The strategy is to redevelop the old market town of Shenzhen and to develop light industries and residential housing estates along the coastal plain. In the early 80's, most of the urban growth is concentrated in the Shenzhen town and Luohu district (Figure 20)[1]. This was the original urban area and is the major customs checkpoint between Hong Kong and China.

Shenzhen town is the oldest part of the urban city which represents the local traditional characteristics and the high degree of prople's involving business activity. The buildings in this area were built thirty years ago with two to three stories high (Figure 21). The problem is that most of them are dilapidated and need to reconstruction urgently. A great efforts are been make to replace it with the modern building while preserve the traditional characteristics.

The Luohu district is relatively new and has been developed as a commercial, residential and hotel center because it is the location of the customs checkpoint on the Chinese side of the border (Figure 22)[2]. This district provides transit services for passengers and businessmen on their way to Hong Kong or to other parts of China. It also served as the central business district in the Shenzhen SEZ while the planned central business district, Futian district, has not developed.

Since the late 80's, large scale urban growth has occurred simultaneously in all these districts. The most evident event is the commencement of the detailed planning and construction of the central business district - Futian district (Figure 23)[3]. Instead of the initial planned function as a light industry, further development around the Futian district, however, will develop the Futian district as the commercial, cultural and financial as well as the administration center in the Shenzhen SEZ. This district will dominate the whole urban structure as well as the joint of other regions.

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1. Dacid K. Y. Chu, *Shenzhen Special Economic Zone* (Hong Kong Geographical Association, 1982), p. 53.
2. *Shenzhen Construction Bureau, The Master City Plan of the Shenzhen SEZ*, 1985.
3. *World Architecture Review*, Shenzhen University Press, 1990.

The Western Planning Region

The western region includes the Xili Reservoir Holiday Camp, Shahe, Nantou, Shekou and Chiwan. The emphasis of this region is mainly on industry and port development. Two districts in this region have played the important role for urban growth in the Shenzhen SEZ. One of them is Shekou, the most important industry site for Shenzhen (Figure 24)[1]. It has a coastal location across Shenzhen Wan from the New Territories of Hong Kong and is easily accessible by sea and by land. Thus, Shekou will most likely be developed for water transportation in the region. The other one is Nantou, the Bao'an County Town, which will be the center of this region. The emphasis in Nantou is industry, both light and heavy, because of the close connection with Shekou and its original industrial base.

3.4.2 Strategies for Urban Development

As a new industrial, commercial and financial center as well as the foreign trade port, the urbanization and development was aimed at that the city should be the implementation of Hong Kong as well as an export outlet serving as a gateway for China. To achieve this scheme, the development strategy of Shenzhen currently focuses on four major areas.

The most important is the construction of a modern port with multiple harbors and functions. The total coast line of 260 km in Shenzhen provides the unique advantage for the port development. In addition to the finished main harbors, which includes Xingang, Dongjiaotou, Shekou, Chiwan, Mawan and Shangbu, the Yiantian port, one of the four largest deep water international transfer harbors in China, is now under construction. It will be developed into supplementary harbors for inland shipping as well as international.

Another focus is the development of a new industrial base. Land along the coast will be used for the development of power stations, petrochemical industries, repair processing industries and warehouse facilities. The inland areas will be used for the development of processing and other industries with an emphasis on food, textiles, machinery, electronics, chemicals, and building materials. The aim is gradually to develop the city's

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1. Dacid K. Y. Chu, *Shenzhen Special Economic Zone* (Hong Kong Geographical Association, 1982), p. 45.

inner areas into a new industrial district with advanced science, technology, and a rational industrial structure with an export orientation.

The third area of focus is to develop Shenzhen as a financial center and trade base. With the development of the port and foreign trade, it is hoped that Shenzhen will gradually become a center for finance, trade, and the distribution of goods. The completion of the railway line joining Hong Kong, Shenzhen and Guangzhou which further links the Pacific and Atlantic oceans will make the Shenzhen SEZ the important bridge for domestic and international transport.

The final focus is the development of unique tourist resorts. Shenzhen has a strong potential for tourism development in the light of geographical location. While keeping the city's basic characteristics of seascapes and spiritual tradition, efforts are made to build tourist areas with local features. The plan for developing Xiaomeisha into a modern beach, Huaqiaocheng a tourist resort with a layout modeled after the Chinese traditional building and world-wide famous building are the main attractive area for tourists. The other tourism resorts are Xilihu, Shiyanhu, Yinhu and so on with the total number of over ten.

The implementation of the above strategies for the urbanization considerably stirs the urban growth in the past decade. This urban growth can be characterized by many phenomena. The most evident feature is the rapid population growth.

3.4.3 Population Growth

Shenzhen's development has been characterized by a high rate of urbanization and population growth within the last decade. In choosing a small frontier town for establishment of a Special Economic Zone, clearly efforts were made to attract people from other parts of China to join the work in Shenzhen and involve in the city's development progress.

Before 1978, Shenzhen was a rural settlement with a relatively small urban population concentrated mainly in Shenzhen Town and Nantou. Of the total population of 314,100 in 1979, only 1500 could be classified as urban temporary residents and the permanent residents was 312,600. Since the designation of the SEZ, the proportion of urban population began to increase rapidly. Of the total population of 2,019,400 at the end of

1990, about 1,332,900 was classified as urban temporary resident and 686,500 as permanent resident (Table 7)[1].

Rapid urbanization is accompanied by a high rate of population growth in Shenzhen. Most of the population growth occurred in the SEZ section of the city, which is the main center of attraction for the migrants. The non-SEZ section (that is, Bao'an county) has a fairly stable population. From 1979 to 1987, population in the SEZ increased by 305 percent, and average growth of 27,000 persons a year. During the same period, population in Bao'an county grew by only 11 percent, and annual increase of around 3,400 people. Due to the originally small population base and low natural increase rate, most of the population growth in the Shenzhen SEZ has been achieved by the massive influx of migrants, which accounts for over 90 percent of the net increase.[2] The main causes of this migration are the economic opportunities, higher wages, and better amenities and environmental conditions.

Table 7: Population Growth in Shenzhen: 1979-1990

Year	79	80	81	82	83	84	85	86	87	88	89	90
Permanent Resident	312	321	334	355	405	435	479	515	556	601	648	687
Temporary Resident	1.5	12	33	95	190	306	403	421	598	930	1268	1333
Total Resident	314	333	367	450	595	741	882	936	1154	1531	1916	2019

Apart from the permanent population, Shenzhen has nearly doubled in the number of temporary residents, both in the SEZ and in Bao'an county. In the early years, most of these temporary residents were construction workers. Now more than half of them are engaged in manufacturing activities, others in construction, agriculture and commercial service industries.

Shenzhen's population is expected to maintain a fairly rapid growth rate in the next decade. The actual growth in Shenzhen's population will depend, to a large extent, on the employment opportunities, which in return rested on the city's ability to maintain a stable

1. *Shenzhen Real Estate Yearbook*, 1991.
2. Xiangming Chen, "Magic and Myth of Migration", *Asia-Pacific Population Journal*, 1987.

economic growth. The future growth and distribution of population in Shenzhen are therefore quite uncertain partly because of the factors beyond the direct control of the government.

The population growth, along with other growths in the Shenzhen SEZ, demands the sufficient accommodation for the public facilities and infrastructure. Of all these, the urban transportation system may be the crucial factor for the city's further development. Therefore, the particular attention should be paid on the demand estimated for the transport system within the city.

3.4.4 Transportation Demand and Development

The development of transportation in Shenzhen SEZ takes into account many factors relevant to a transport network: population targets, the distribution of population, the economic characteristics of the population, and the relationships between residential areas and industrial, shopping and other functional areas. Other factors which influence the evaluation of the transport system include the physical relief of the area, external communications with other regions in the country. These factors formulate the passenger flows pattern and freight flows pattern which finally determine the transportation systems.

The pattern of Passenger Flows

The Target Population of the Shenzhen SEZ. The most important factor which determines the pattern of passenger flows is the target of population of the Shenzhen SEZ. Before 1980, Shenzhen town was just a small frontier town with an urban population of 23,000 and an urban area of 1.7 sq km. However, since its designation as one of the Chinese SEZs, its population has grown rapidly. By the year 2,000, it will further grow to 80,000 and the urban built-up area will amount to 98 sq km.[1] Following such rapid increases of population and urban area, it is to be expected that there will be a corresponding expansion of demand for transportation.

The Spatial Distribution of Population. The residential location of population determines the weight of the transportation in the different districts (Figure 25). Of the

1. David K. Y. Chu, *Population Growth and Related Issues*, p. 131.

major urban districts, the five districts in the center of the zone, which includes Futian, Shangbu, Luohu, Shenzhen Town and Reservoir districts, are the most heavily populated, covering as much as 68 percent of the total urban population. Towards the west, eight districts account for another 27 percent, while the eastern portion is the least populated with only 5 percent of the planned population residing there[1]. The five central districts will therefore generate the most of passenger journeys, followed by the western and eastern districts (Figure 26).[2]

Personal Economic Characteristics. Another factor is the economic characteristics. Currently, the main traffic vehicle for most people in Shenzhen SEZ is bicycle and public transportation. But with rising living standards, people tend to use motorized transport more frequently in order to save time and energy. This requires that two different traffic systems should co-exist in the transportation system: the motored vehicle and non-motored bicycle.

However, in addition to the influence of passenger pattern on the transportation, the same consideration should take on the other important factor - the pattern of freight flows, especially for the developing city involving much industrial and agricultural development.

The Pattern of Freight Flows

Two different cargo are considered for the pattern of freight flows in the Shenzhen SEZ: goods for household consumption and the import/export of manufacturing plant. It is necessary to consider them separately because their origins and destinations are different. As more agricultural land is absorbed into the Shenzhen SEZ, food and fuel will necessarily be supplied mainly by the neighboring counties of Dongguan and Huiyang. On the one hand, Nantou, Bao'an and the north part of the Reservoir district will be the chief entry points for these goods for household consumption. The destination of these goods will be the residential districts.

The imports and exports of manufacturing plant will tend to use the gateways at

1. David K. Y. Chu, *Forecasting Future Transportation Demand and the Planned Road Network*, page 142.
2. Kwan-yiu Wang, *Modernization in China*,(Hong Kong Geographical Association, 1982), page 150.

Futian and Wenjindu. Most of the factories of the Shenzhen SEZ are involved in export processing. Some raw materials and semi-finished products will be transported from Hong Kong to Shenzhen and finished products will then be returned back to Hong Kong. These two gateways will thus be the entrances and exits for these cargoes. The receiving points of these cargo flows will be the industrial zones in the Shenzhen SEZ. As a result, the pattern of freight flows generated by the Shenzhen SEZ's functional districts can be concentrated on the Xiangmihu area (Figure 27).[1]

The Factors Considered for Transportation

Based on the flows of passenger and freight, a few points should be noted for transportation in the Shenzhen SEZ. One of them is that the total flows of the Shenzhen SEZ can be divided into three categories according to the space distribution. The first category is the traffic between Hong Kong and the area north of the Shenzhen SEZ. This includes the traffic along the railway and the highway between Guanzhou and Hong Kong. It is inevitable that this traffic should be separated from those that is generated inside the Shenzhen SEZ. The traffic generated inside the Shenzhen SEZ should be large enough to justify its own system. The second category is the inter-district transport within the Shenzhen SEZ which is just discussed. The third category is the traffic inside each functional urban district. Nonetheless, it should be noted that the good traffic network is supplemented by a good district network when the city's economy goes fast (Figure 28).

As pointed out before, the district transport will only account for a part of the motorized transport demand. When people become more affluent, some district journeys will demand motorized transport. Additional vehicles will be needed to cope with this demand. Furthermore, with the growing affluence of the citizens and the increasing number of tourists, taxis and other personal transport vehicles will become a significant element of the Shenzhen SEZ transport system which should be considered carefully.

3.5 Urban Growth Management for Land Development

The rapid urbanization and industrial growth has brought considerable changes in

1. Kwan-yiu Wang, *Modernization in China*, page 154.

the past decade. These changes have altered the quality of the urban city greatly. The proper urban management for these changes is urgently needed in order to guarantee the benefits of the development that will not be offset by adverse effects. The land development management in the Shenzhen SEZ may provide valuable experience for other developing cities with traditional administration in China.

3.5.1 Urban Panning Administration

The administration of the urban planning in the Shenzhen SEZ is carried out by the Planning Department of the Shenzhen SEZ Construction Bureau. The main functions of the Planning Department are to carry out planning and to issue land use certificates and building permits. Apart from the administration office, there are three major divisions in the Planning Department. The Planning Division is responsible for the preparation of master plans, detailed layout plans of the planning districts, and special subject plans such as waterworks, electricity, drainage and recreation; it is also responsible for land use control through the issue of land use certificates. The Building Control Division scrutinizes all building plans to check whether they conform to the specifications in the land use certificates and the building standards of China before making recommendations for the issue of building permits by the Planning Department. The Surveying Division carries out all surveying work in the municipality and provides land use, hydrological, topographical and geological information for planning.

3.5.2 Regulations for Development Control

There were no building laws to control land development in Shenzhen SEZ. The master plan was only a guideline. The lack of a regulated system of land administration means that there is no guarantee that land will be developed as planned. In order to improve the investment environment, the Provisional Regulations on Land Control in the Shenzhen SEZ were passed in November 1981.

The land development control regulations mainly required that all proposals for the use of land must be submitted to the Shenzhen Government for approval. Private

transactions and negotiations with a landowner without the prior approval of the government will not be permitted.

The leasehold system established in the SEZ required that the lease period depends on the amount of investment and practical needs. The maximum lease period for major land use is shown in Table 8.[1] Upon the expire of the lease, it is renewable subject to the approval of the special zone authority.

A land use certificate from the Shenzhen government must be obtain before land development can proceed. The application for the certificate has to be accompanied by related information on the scale and nature of the proposed land use. The land will be delineated and a land use certificate will be issued by the Planning Department after it has been verified that the application conforms with the master plan.

The Provisional Regulations on Land Control in the Shenzhen SEZ guard strictly against land speculation. It prohibits private land transactions by explicitly regulated that the land-use certificate refers only to the right to use the land and not the ownership of the land.

Table 8: Urban Land Lease Periods in the Shenzhen SEZ

Land Type	Maximum Lease Period (years)
Industrial	30
Commercial	20
Residential	50
Scientific, Medical and health	50
Tourism	30
Agricultural	20

The urban land development in the Shenzhen SEZ mainly controlled by the Bureau of Construction. The preparation of the master plan and the establishment of land use control regulations are major steps towards the management of land development in Shenzhen, which effectively control the urban structure and urban growth.

1. *Provisional Regulations on Land Control in Shenzhen Special Economic Zone*, 1981.

4 The Problems and Prospects

The urbanization and development after 1978 have removed many of the more severe problems. Housing construction accelerated. Light industry received more investment, thereby generating both more consumer goods and high employment. Neighborhood and individual private enterprises were sanctioned, providing another rich source of jobs, consumer goods and services.

However, the designation of Shenzhen, the test of concept of Special Economic Zones in a socialist country, and the subsequent growth from a weak based small town to a commercial urban city developed within a couple of decades undoubtedly bringing about a variety of problems. The most serious problems revealed in the urban growth process in the Shenzhen SEZ are infrastructure provision, population increase, administration efficiency and co-ordination as well as the competition from other SEZs in China.

The Provision of Infrastructure

The first and most serious problem encountered in the Shenzhen's development is the lack of infrastructure. Because of the heavy capital outlay involved, funds are not always available to maintain adequate provision of these facilities. Today, the roads, sewage system and other essential facilities are still inadequate.

The most common problem is that the rain water can not discharged properly and swiftly during heavy rain season. The result is usually that either some residential building are full of water on the first floor or the streets are overwhelmed. As a result, the traffic system has to be suspended. This problem remind urban designers that more research must be done for the potential capability of the water supply, sewage and other facilities.

The traffic system also need improvement. For example, the congestion in the Louhu district seriously eliminates the efficiency of development. It usually takes nearly one hour to go through this district during the traffic peak time. The problem is that traffic flow is limited to the four streets in the district - three roads leading to the main Shennan Street.

Residential accommodation, even though much better than other cities in China, is still far from satisfactory. In 1991, the average residential area was only 10.89 square

meters per person, 6.6 square meters in 1980.[1]

The key to solve these problems is the raising of capital. The effective way for the local government to raise capital is to apply flexible urban policy to attract foreign investors. Long term land leasing or selling land use with limited period is the direct way for capital raising as well as urbanization and development. As to urban housing, the traditional housing policy should be innovated. In this way, the return of the investment is high and the rapidly circulation of the capital resource will speed up the housing construction in the large scale. On the other hand, the emphasis of the construction should be multi and high rise apartment residential buildings instead of single houses because of the shortage of the capital and large population.

Population Growth and Social Problems

Because of the rapid population growth, the rise of the price for land and rents for housing in the Shenzhen SEZ causes many social problems. The immigration of workers and management staff creates severe pressure on food, housing and other suppliers which then triggers inflation. Although some people, such as landowners benefit from this price increase, most people suffer from declining standards of living and the difficulties of making ends meet. In 1984, the average residential building rent was only $40 annually, while it rose to $136 in 1991. The average salary increase does not match this increase. Consequently, the uncertainty of settlement causes serious social problems and the crime rates have increased in recent years. The most effective solution for this problem is that government should properly control the overgrown urban development and further eliminate the inflation. Enacting the minimum salary to secure the basic need for people's living standard is another alternative.

Administration Efficiency and Co-ordination

The responsibilities and duties of the government agencies are more clearly defined and also more comprehensible after the reform and restructuring of Shenzhen's administrative structure in early 1982. However, the efficiency of management is not as expected.

1. *Shenzhen Real Estate Yearbook*, 1991.

One reason for this situation is that few management staff members have received formal training in modern management techniques and the experienced management personnel are recruited from other parts of China. The application of outdated management methods to a modern enterprise can be a hindrance to development. Another reason is the lack of coordination between departments. A typical example as mentioned before that a street recently built by one department is opened by the another department because the failure to coordinate. The fact indicates that each department cannot just be responsible only for its own projects and have its own annual plan. The efficiency of both management and capital utilization are very low.

The only solution for this problem is to restructure the government and innovate the personal appointment system which is currently controlled by the central government. Under the planned system, the government restructure is painful because it involves conflict with the deep-rooted traditional habitats. However, this is the essential step to smooth the process for the further development in the Shenzhen SEZ.

Competition

Judging from recent development in China, Shenzhen is no longer enjoying the special privileges it once was. The opening of other coastal cities and economic development zones has eliminated the allure of Shenzhen and made the SEZ increasing less "special." Apart from the need to draw up long term plan and development strategies in light of the current situation, the policies and attitudes of the central government will have major implications for Shenzhen's future growth. In view of this problem, the most practical suggestions is to render more flexible policy to investors. The purpose of the policy innovation is the transition from the planned system to the market system which performed properly without the government control.

In view of these problems, it is necessary to restructure existing enterprises, accelerate technological advances, reform economic activities with a view to achieve higher productivity, and complete a number of key infrastructure investments. Planning must be based on economic, social, and environmental efficiency so that the city can plan, implement, and develop in step.

5 Conclusions

The urban growth pattern in the Shenzhen Special Economic Zone (SEZ) has stemmed from the Western modernization concept within the Chinese traditional cultural environment. Because of this, the strategy for urbanization used in the Shenzhen Special Economic Zone is totally different from that of the traditional cities developed in China.

The introduction of the concept "Special Economic Zone" is the first and critical step to speed up the transition of urban growth. The implementation of this concept has, in a great extent, changed the traditional self-sufficient economic system with the market economic system, which created a new and active environment for further urbanization and development in the Shenhen SEZ.

With the advantages of the designation of the SEZ status, open policy and physical geography, the urban growth in the Shenzhen SEZ rapidly transformed. This transformation is first expressed in industrial urbanization and the agricultural development. The urbanization policy in the Shenzhen SEZ provided an advanced urban land use pattern which favored the industrial location, structure and development. Because the government confirmed that the foundation of economic development in the SEZ should be light manufacturing industry, more consideration was given to the innovative policy to stir the industrial urbanization in the initial period. Among these, the tender system, the introduction of contract labors, the home-purchase scheme are all innovative measures for the success of development.

In terms of the agricultural development, Shenzhen broke away from its former traditional principle of self-sufficiency and changed to an export-oriented cropping system. Whether the product is vegetable, grain or something else, the criteria for this decision should be profit maximization and cost minimization. This criteria determined the agricultural land use pattern in the Shenzhen SEZ. With the development of the city as more and more rural agricultural land was finally urbanized, the relationship between rural and urban regions changed and the involvement of adjacent regions for the agricultural production supply were required.

The urban structure in the Shenzhen SEZ is mainly determined by the geographical features. The location features; such as hilly, plate and costal areas as well as the acces-

sibility to outside world are the main factors to determine various urban functions. Consequently, the urban structure comprises independent urban centers scattered throughout the urban areas instead of being dominated by a single urban center, like other traditional Chinese cities. Because of this new formula for urban structure, the development strategy for the urban growth pattern deviated from the traditional techniques. Each region was developed simultaneously as an independent small urban unit with such function as commerce, industry or tourism. Despite these conditions, the urban growth in all these regions were properly managed and finally merge together as one urban city, fitting to the master plan. It is in this way that the Shenzhen SEZ developed from a rural town to a commercial urban city within a couple of decades.

The rapid urban development brings about fast urban population growth. The population structure and characteristics in the Shenzhen SEZ reveal that the traditional urban population registration system no longer matches the requirement of the urbanization and development in a new atmosphere. The urban population growth should be adjusted by the market demand and employment opportunities. The important advantage for the population growth is to create a competitive environment for laborers and to improve the work efficiency.

In general, the urban growth in the Shenzhen SEZ is successful in terms of many measures. The most important is the introduction of the advanced experience from capitalistic countries. Instead of looking backward to the traditional urban growth pattern, they observed and understood capitalism and followed the trend of modern economic development in the capitalistic world. On the other hand, they also tested the different policies especially those connected with various economic systems by using the Shenzhen SEZ as a laboratory. As a result, the capitalism concept for urbanization and development in a socialist country is achieved in the Shenzhen SEZ.

The transition of urban growth in the Shenzhen SEZ is not just significant for this city, it has had an impact all over the country. The experiences gained in the Shenzhen SEZ are a valuable guide for the developing cities, especially for the towns and small cities along the east coast in China.

Figure 1. Traditional Urban Pattern.

Tang Chang-An (1080):
City plan reconstructed from historical accounts and recent archaeological excavations.

Source: G. William, "The City Late Imperial China".

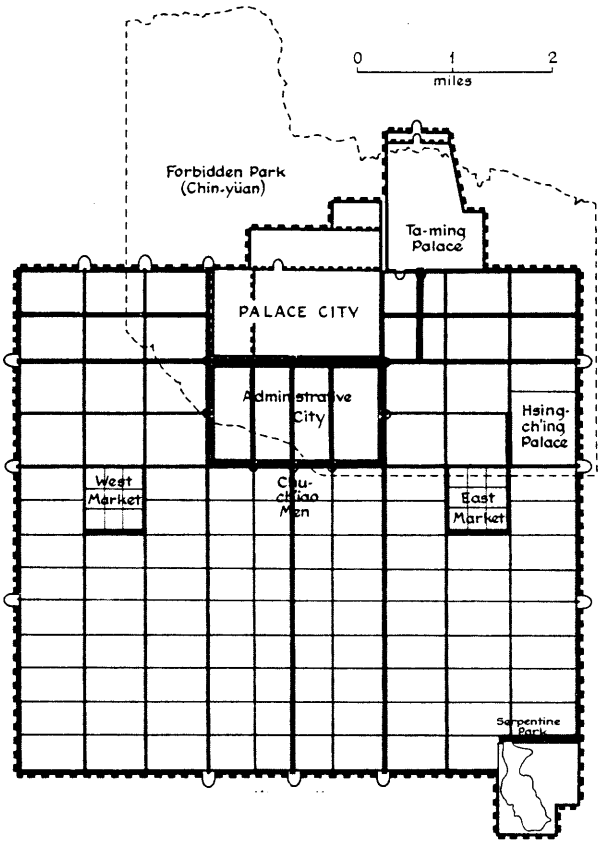


Figure 2. Traditional Urban Growth Process.

Nanjing through history:
1. Jianye-Jiankang, including palace-city location.
2. Southern Tang Nanjing, with possible palace-city location.
3. Ming Nanjing, with palace-city and imperial-city in the eastern portion.

Source: Nancy Shatzman Steinhardt, "Chinese Imperial City Planning".

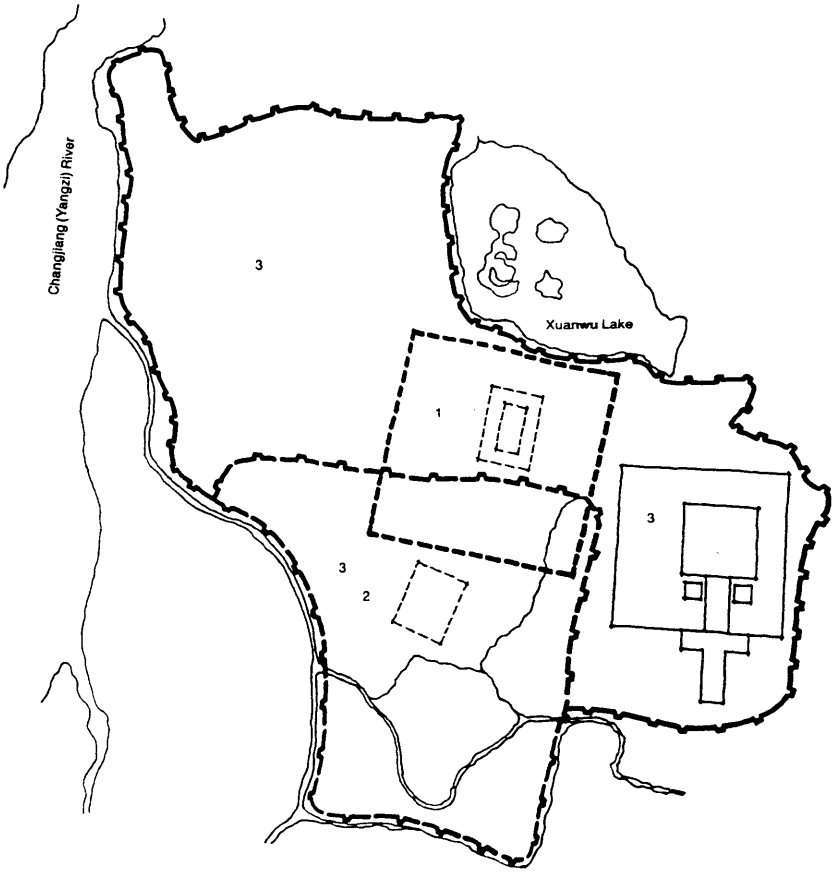
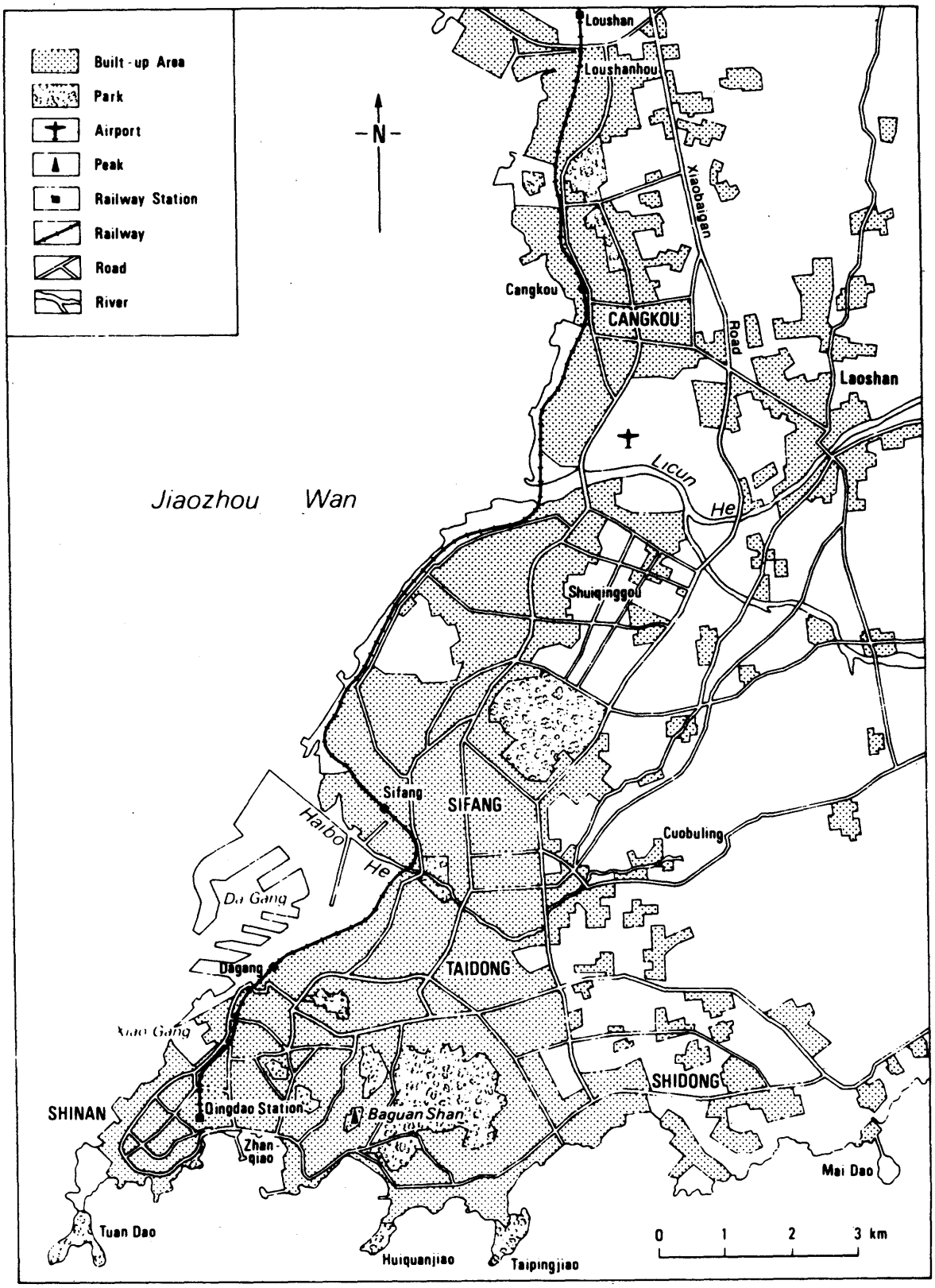
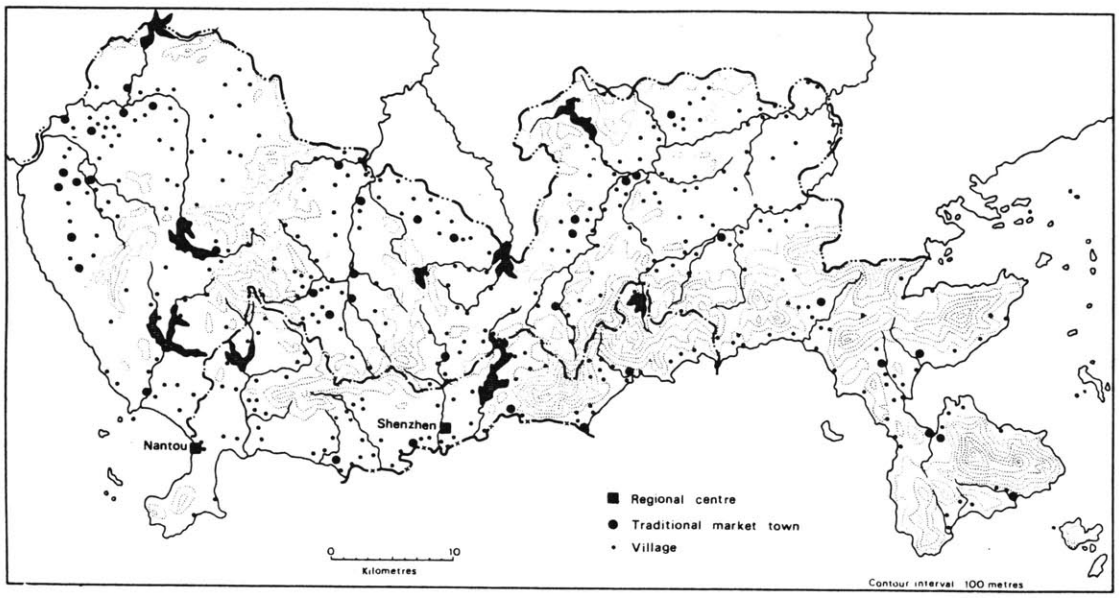


Figure 3. Qingdao City: Urban Pattern Transition with Foreign Influence.



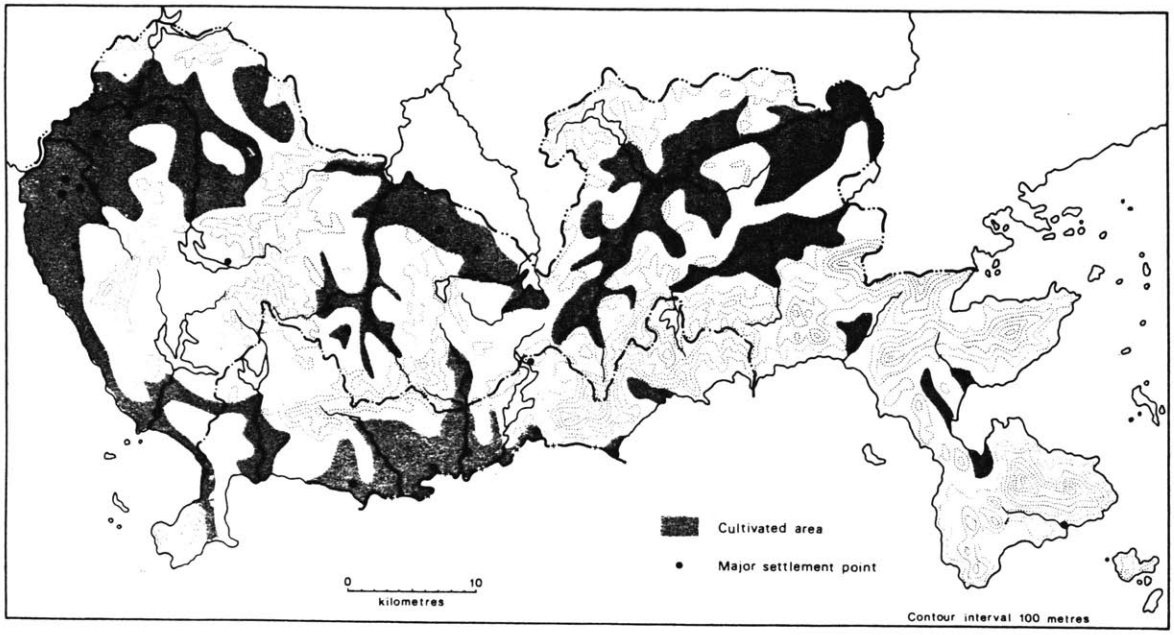
Source: Yue-man Yeung, "China's Coastal Cities".

Figure 4. Settlements of Shenzhen Municipality.



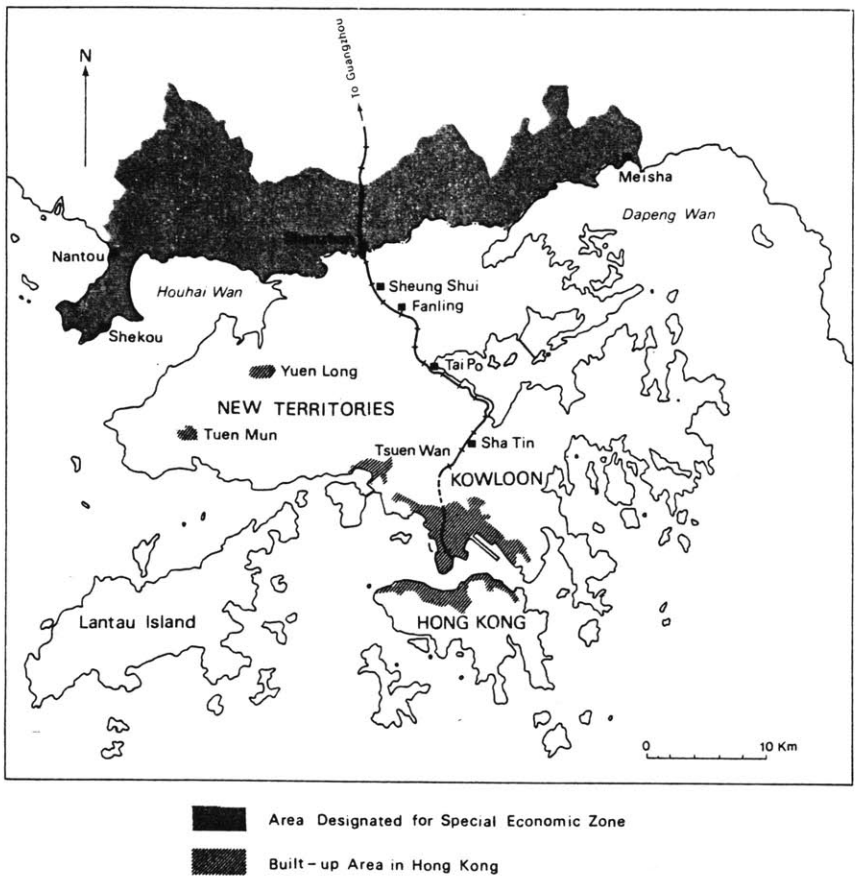
Source: Kwan Yiu Wong, "Chinese Experience in Modernization".

Figure 5. Shenzhen Municipality: Cultivated Land and Major Settlement Areas.



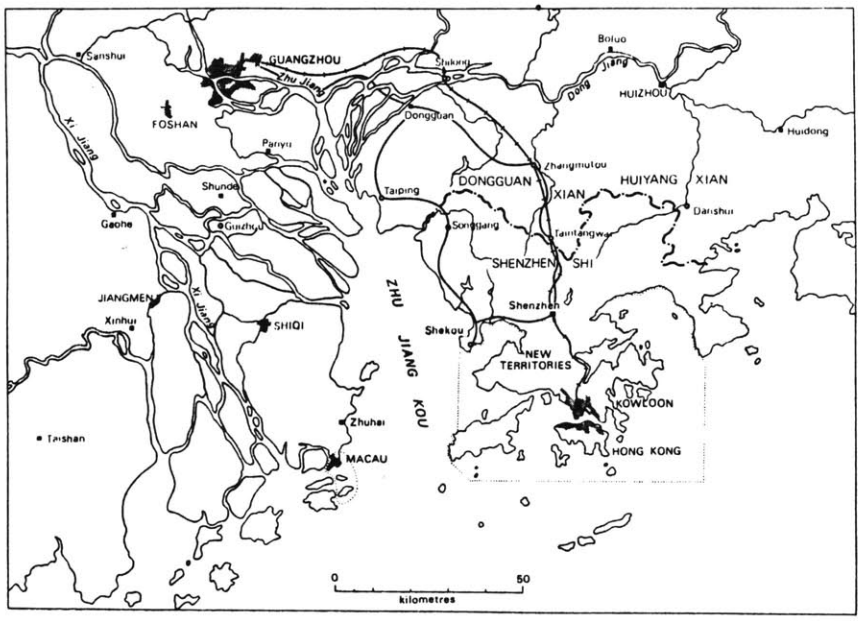
Source: Kwan Yiu Wong, "Chinese Experience in Modernization".

Figure 6. The Location of the Shenzhen Special Economic Zone.



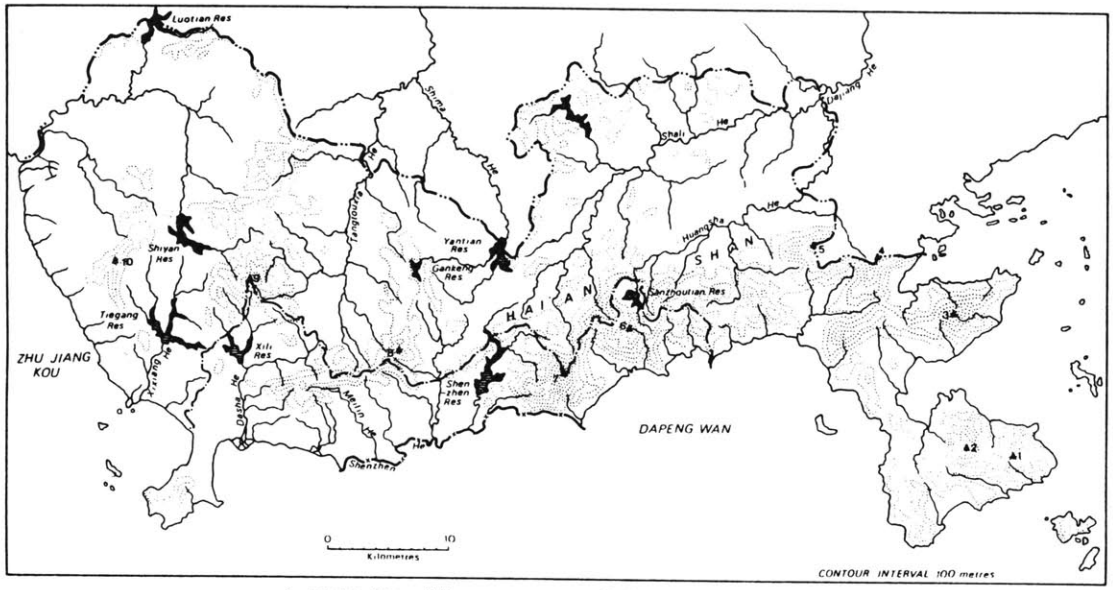
Source: Kwan Yiu Wong, "Chinese Experience in Modernization".

Figure 7. The Location of Shenzhen in the Zhu Jiang Kou.



Source: Yue-man Yeung, "China's Coastal Cities".

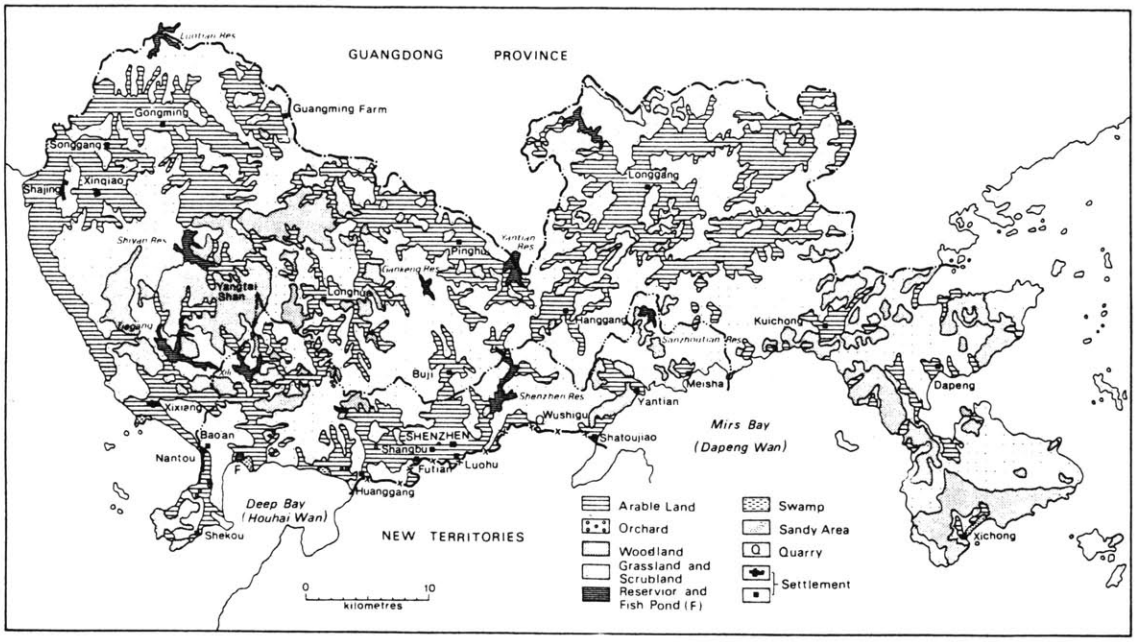
Figure 8. Topographic Features.



1 Feiyang Shan 803m
2 Qiniang Shan 873m
3 Paiya Shan 724m
4 Bijia Shan 720m
5 Tiantou Shan 655m
6 Meishajian Shan 757m
7 Wutong Shan 944m
8 Jigongtou Shan 416m
9 Yangtai Shan 590m
10 Damao Shan 378m

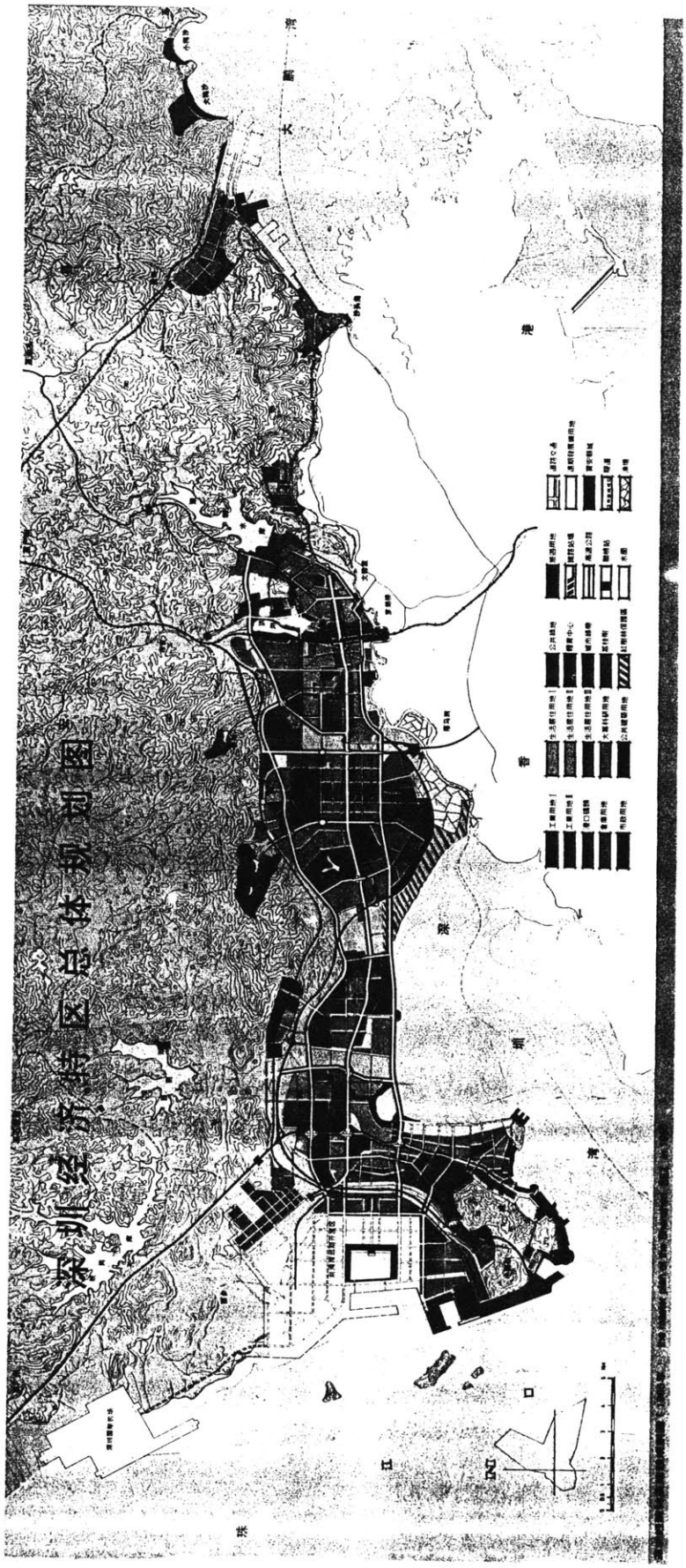
Source: Kwan Yiu Wong, "Chinese Experience in Modernization"

Figure 9. Land Use Map of Shenzhen Municipality.



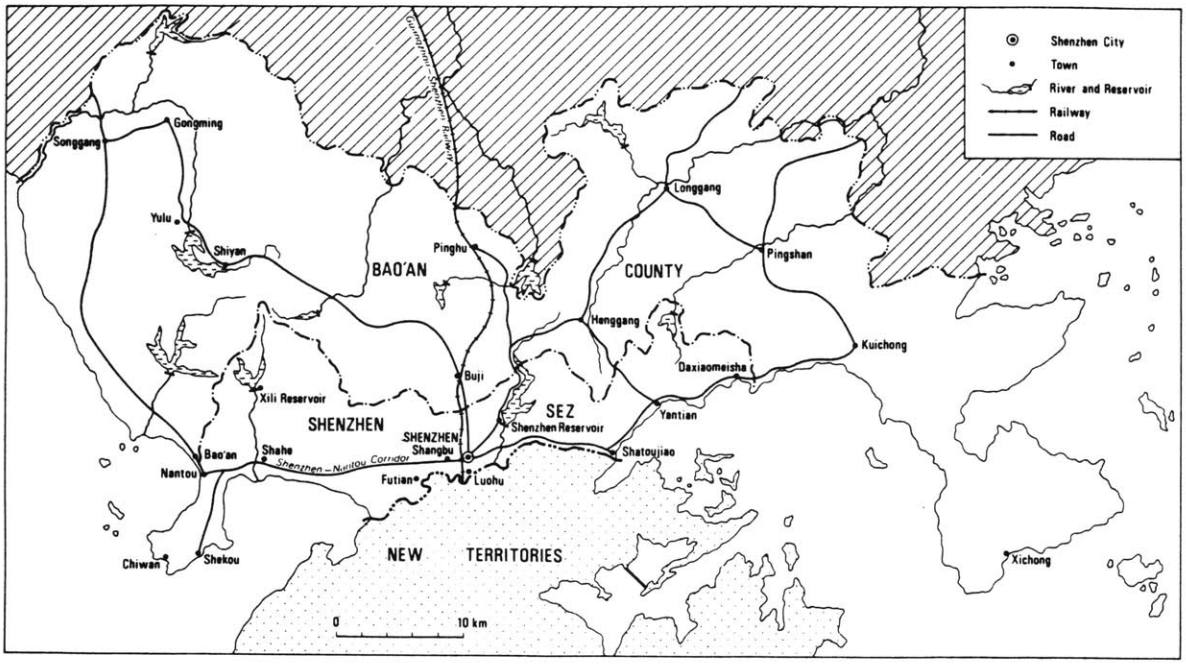
Source: Kwan Yiu Wong, "Chinese Experience in Modernization"

Figure 10. The Master Plan for the Shenzhen SEZ.



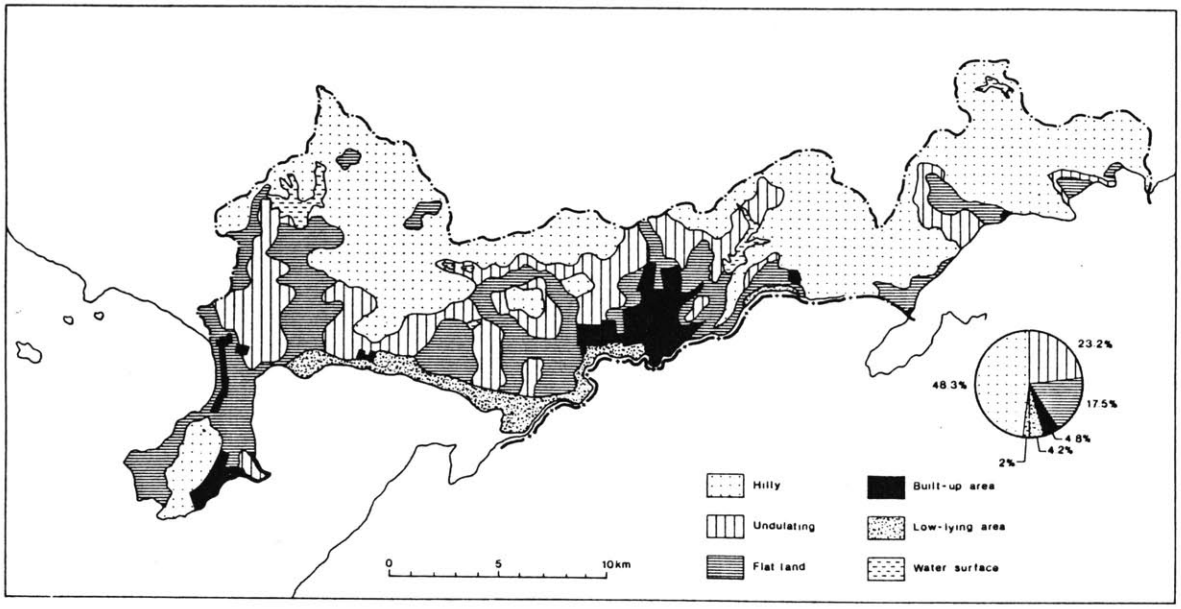
Source: Shenzhen Construction Bureau, "The Master City Planning of the Shenzhen SEZ".

Figure 11. Shenzhen Municipality (Shenzhen SEZ and Bao'an County).



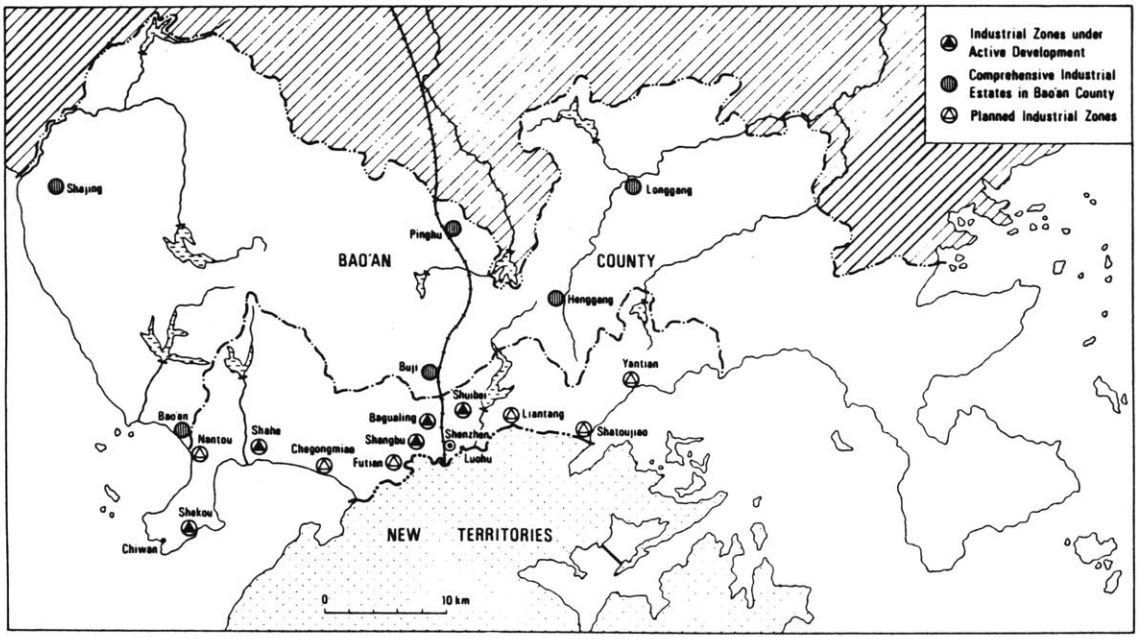
Source: Yue-man Yeung, "China's Coastal Cities".

Figure 12. Land Types in the Shenzhen SEZ.



Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

Figure 13. The Location of Industrial Districts in Shenzhen.



Source: Yue-man Yeung, "China's Coastal Cities".

Figure 14. The Four Concentric Rings of Urban Agricultural Land Uses in Shenzhen.

1. Inner Suburban Zone
   -dominant crop: leafy vegetables.
2. Outer Suburban Zone
   - dominant crop: non-leafy vegetables.
3. Incorporated Counties Within Municipal Boundaries (ICWM)
   - dominant crops: grain and oil-bearing seed.
4. Adjacent Counties Outside the Municipality (ACOM)
   - dominant crops: grain and oil-bearing seed.

Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

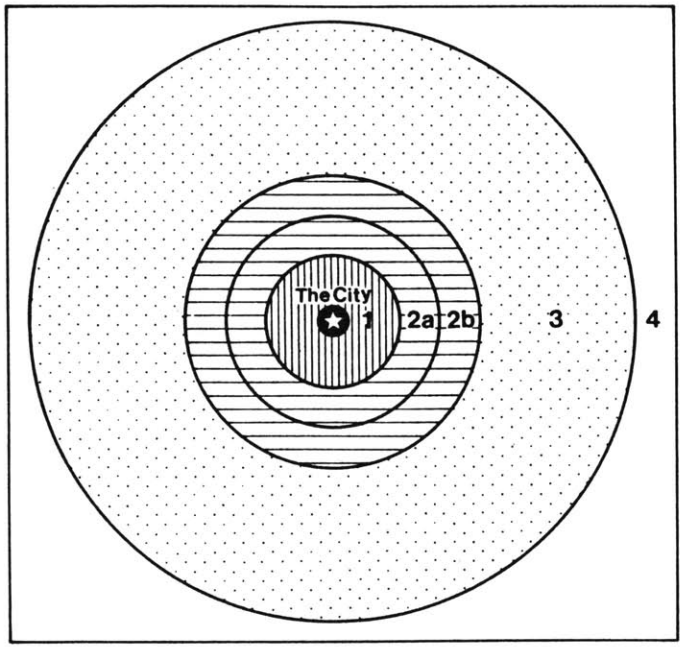


Figure 15. The Theoretical Agricultural Land Use Pattern of Shenzhen.

1. Inner Suburban Zone: the SEZ.
2. Outer Suburban Zone: southern part of Bao'an.
3. Incorporated County: northern part of Bao'an (ICWM).
4. Adjacent Counties Outside the Municipality: Dongguan and Huiyang Counties (ACOM)

Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

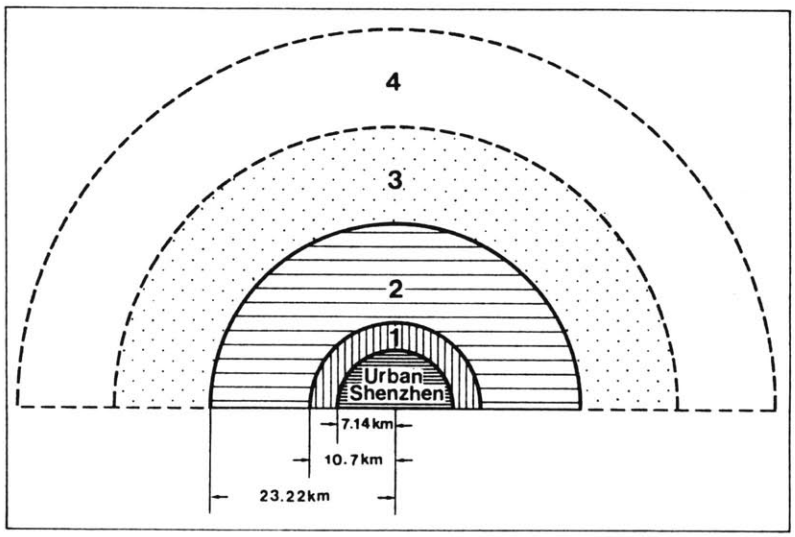
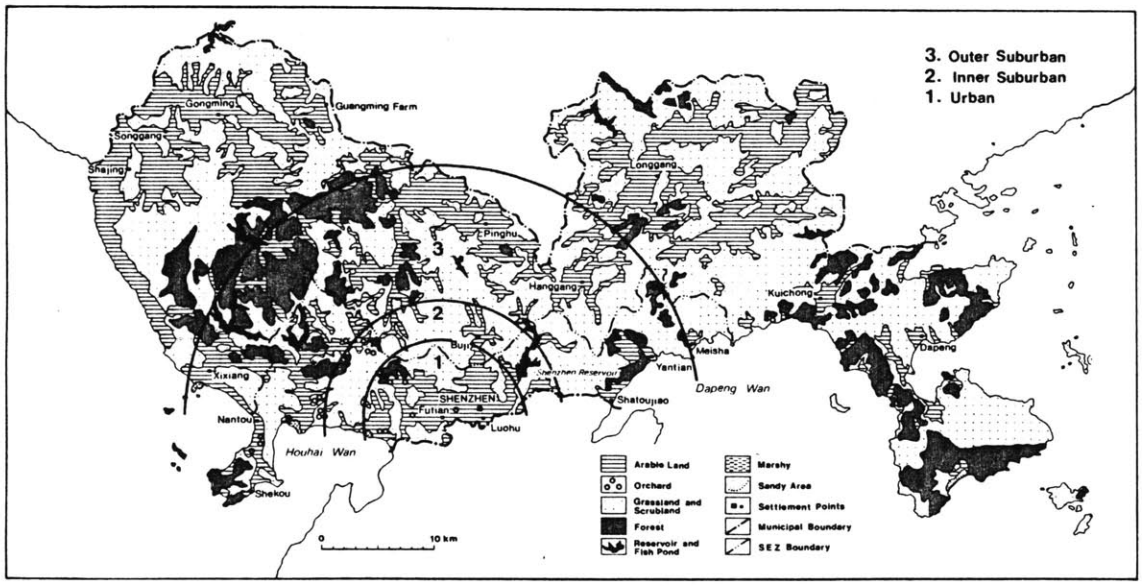


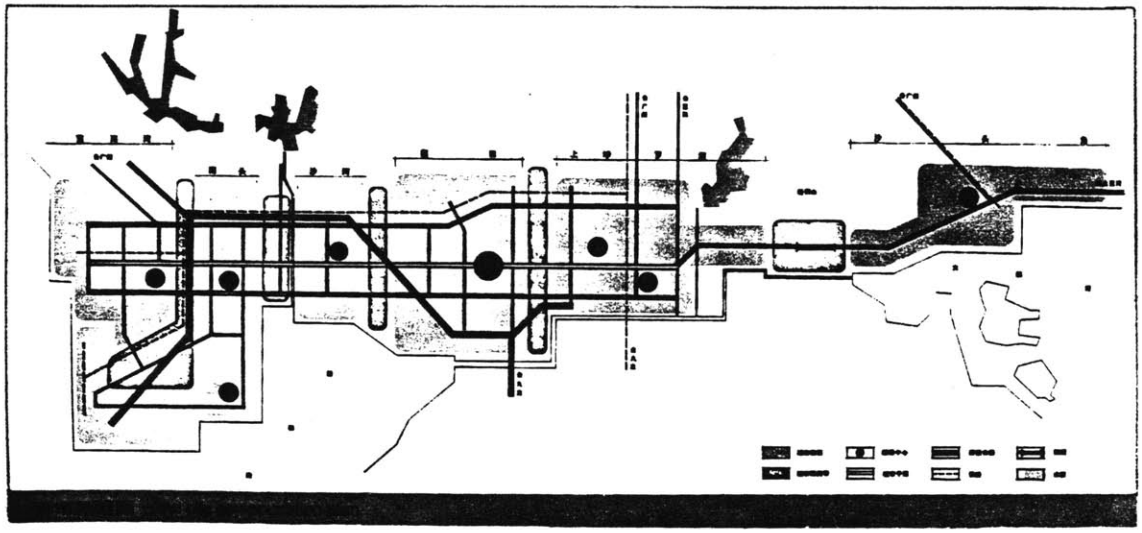
Figure 16. Land Use Belts with the Futian District as the Center.



Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

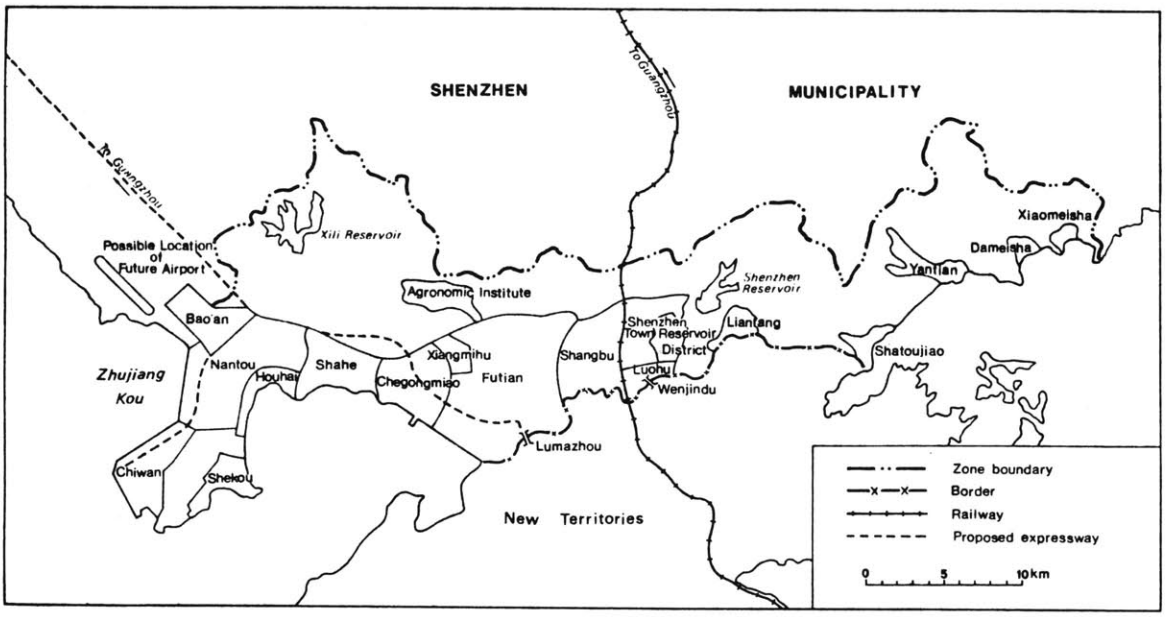
Figure 17. Urban Structure and Districts.

a. Urban Structure.



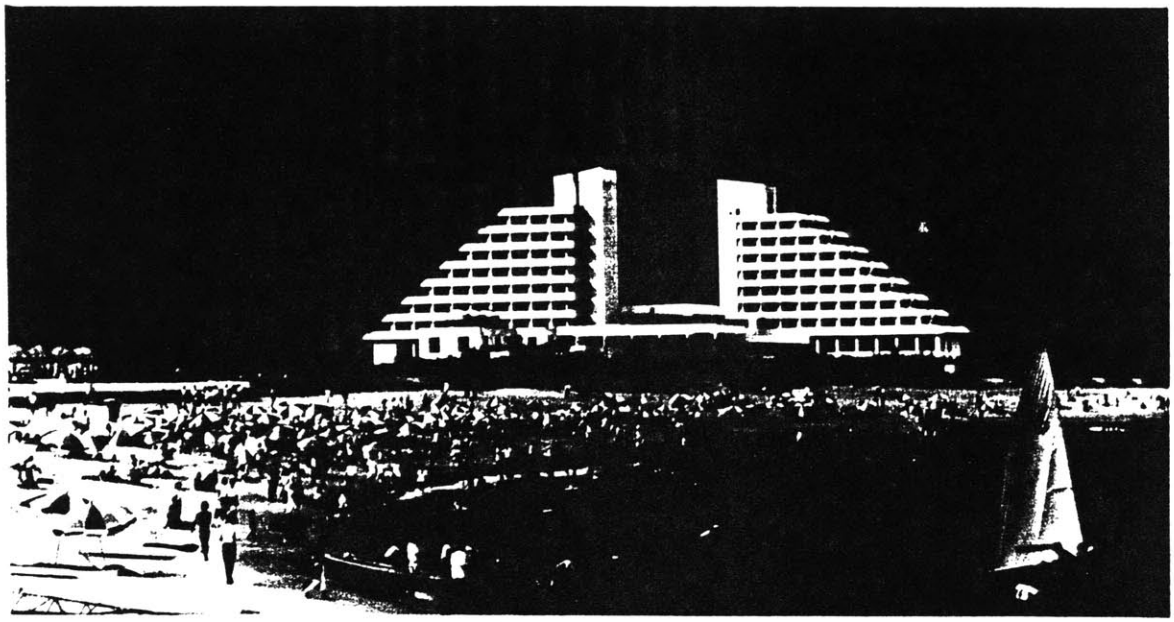
Source: Shenzhen Construction Bureau, "The Master City Planning of the Shenzhen SEZ".

b. Urban Districts.



Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

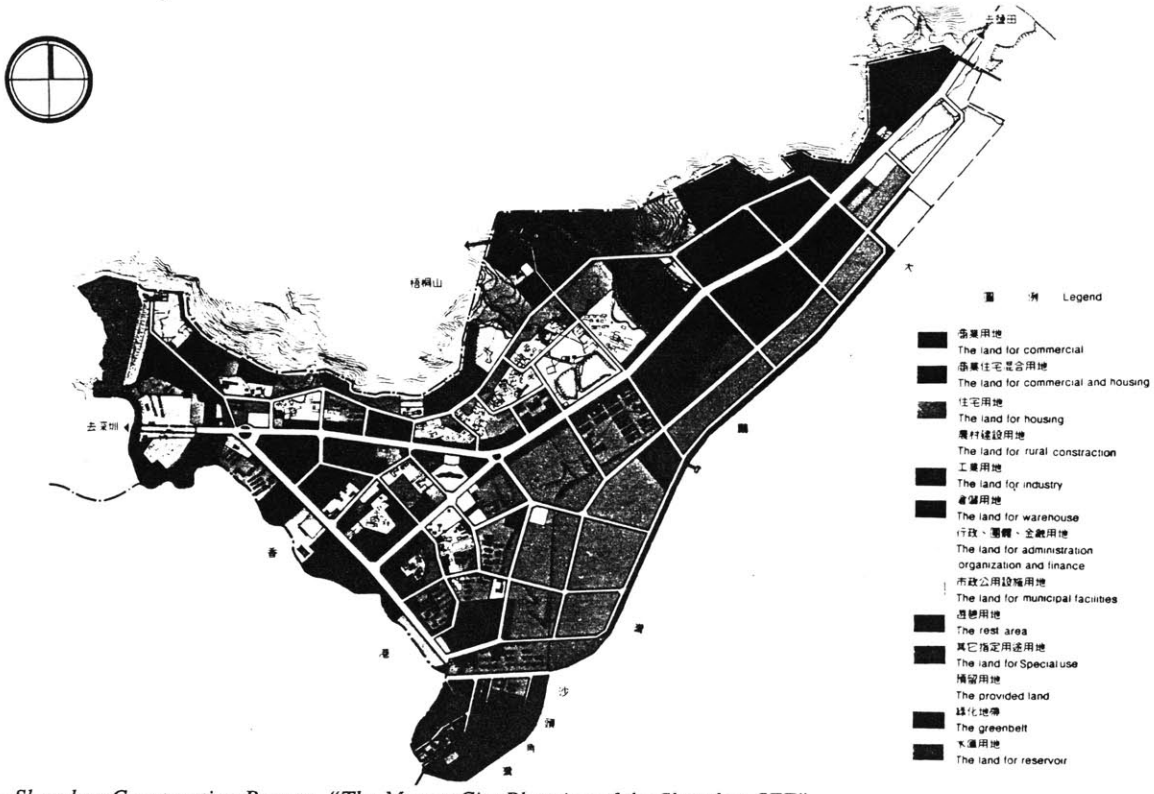
Figure 18. Xiaomeisha District.



小梅沙海濱旅遊中心　Xiaomeisha sea beach recreation centre

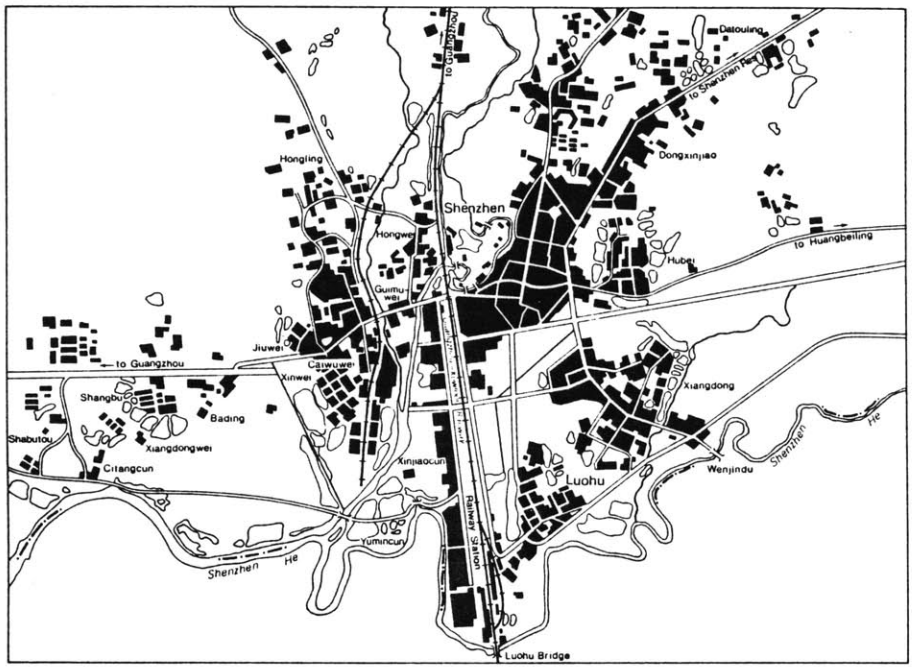
Source: Shenzhen Construction Bureau, "The Master City Planning of the Shenzhen SEZ".

Figure 19. Shatoujiao District.



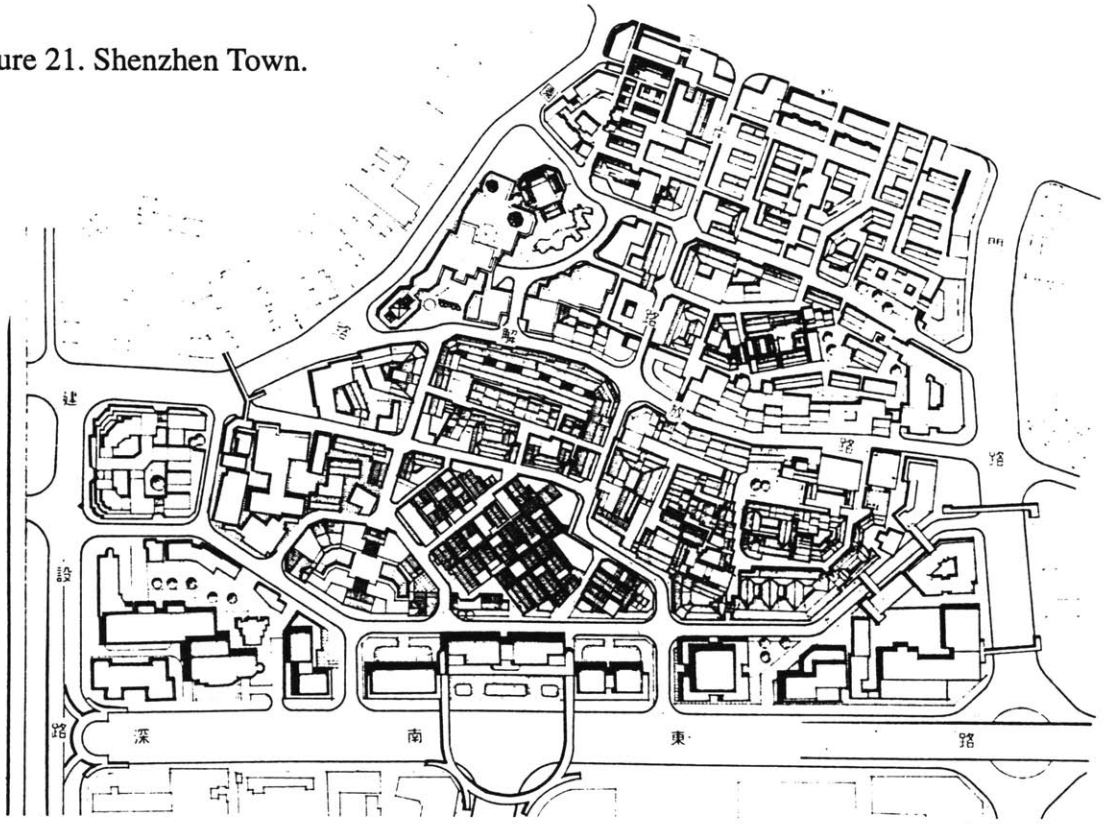
Source: Shenzhen Construction Bureau, "The Master City Planning of the Shenzhen SEZ".

Figure 20. Shenzhen Town and Luohu District.



Source: Kwan Yiu Wong, "China's Experience in Modernization".

Figure 21. Shenzhen Town.

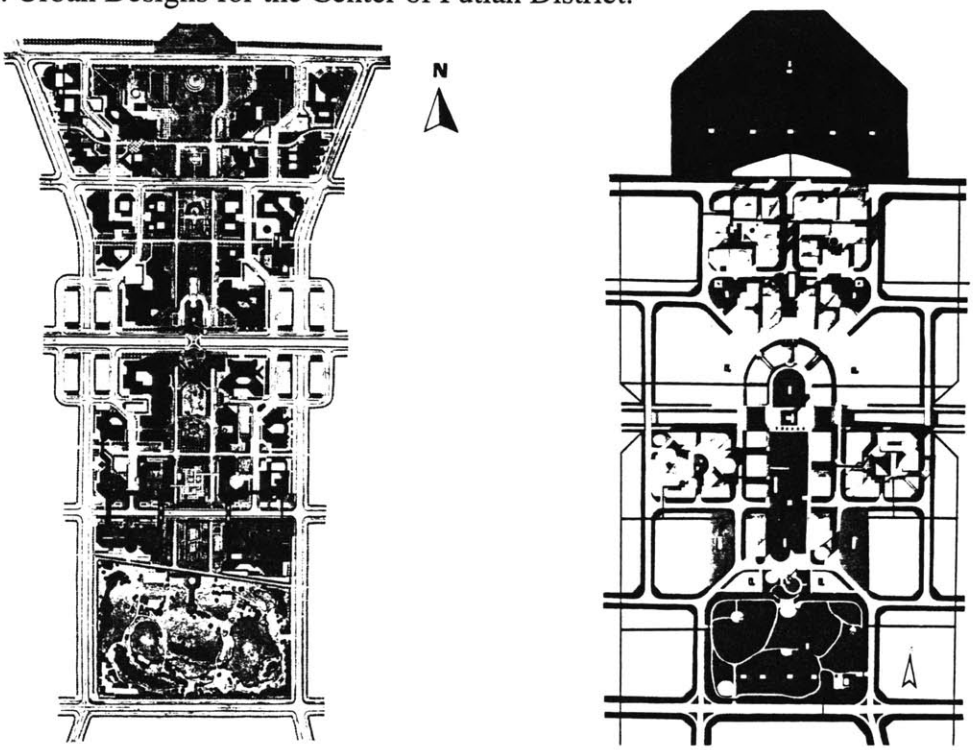


Source: Shenzhen Construction Bureau, "The Master City Planning of the Shenzhen SEZ".

Figure 22. Luohu District.

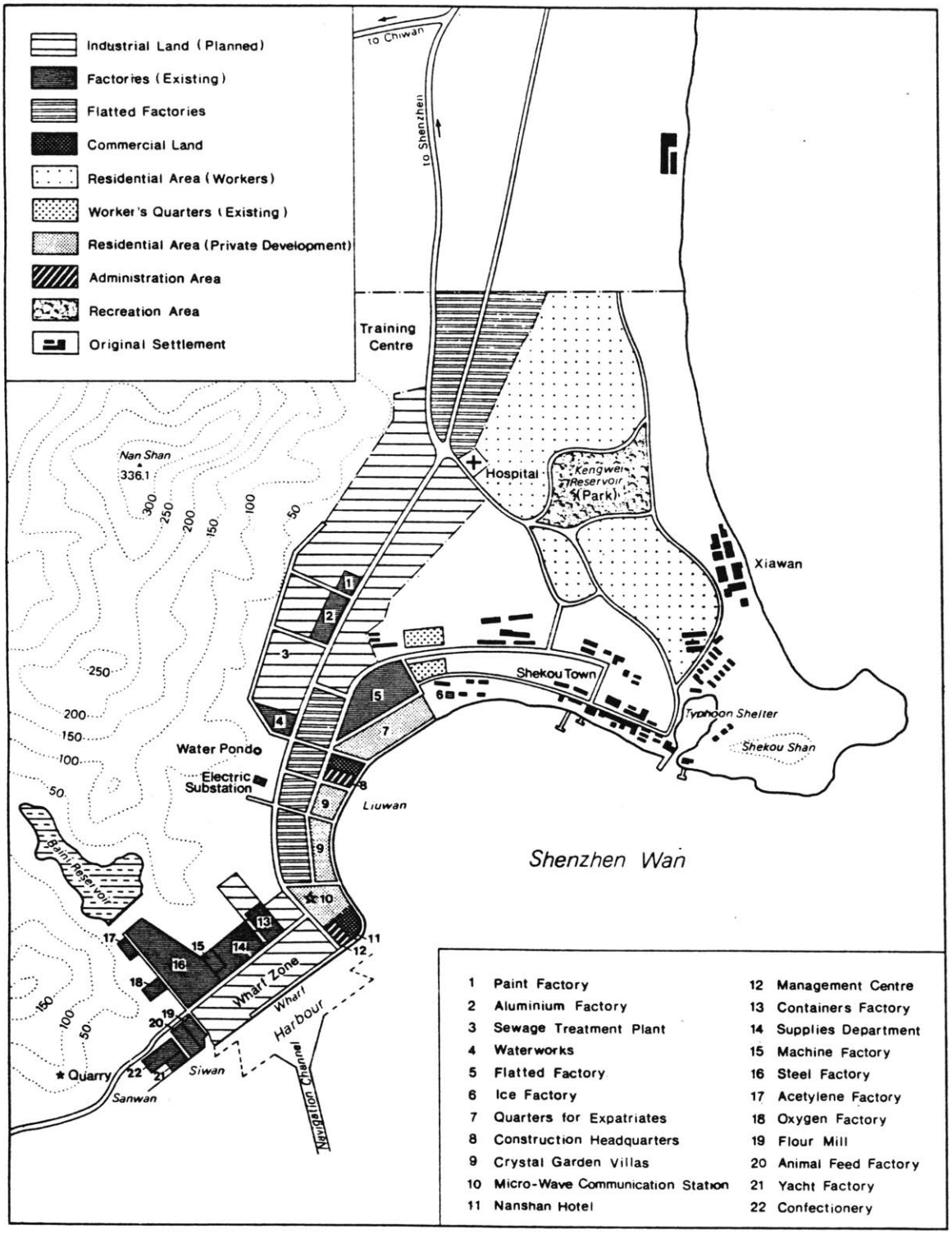
Source: Shenzhen Construction Bureau, "The Master City Planning of the Shenzhen SEZ".

Figure 23. Urban Designs for the Center of Futian District.



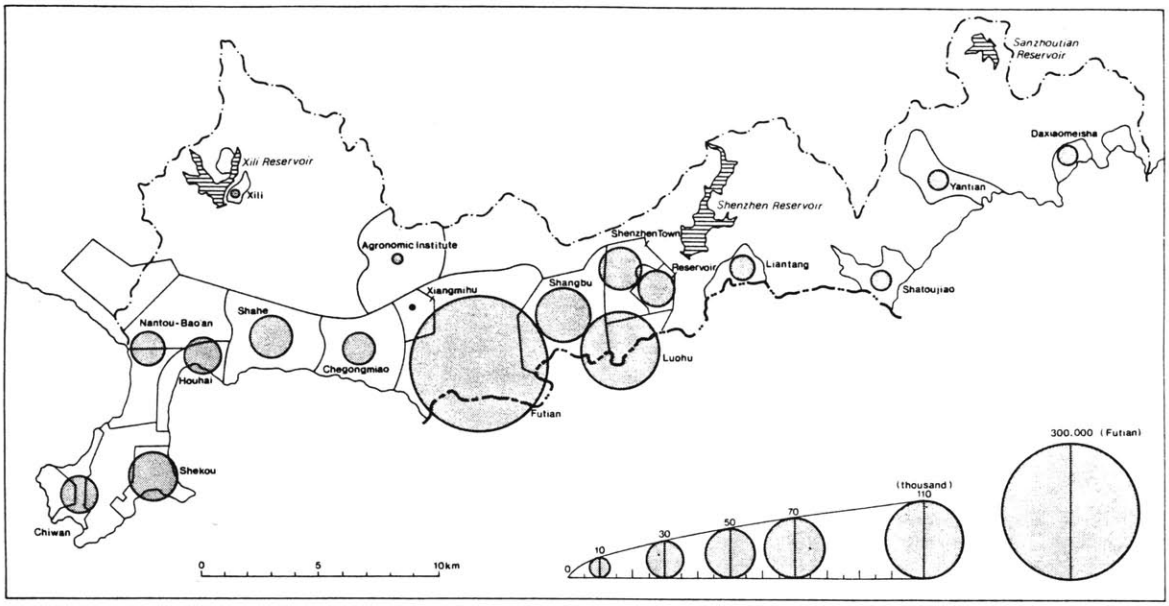
Source: Shenzhen Construction Bureau, "The Master City Planning of the Shenzhen SEZ".

Figure 24. Shekou Industry Zone.



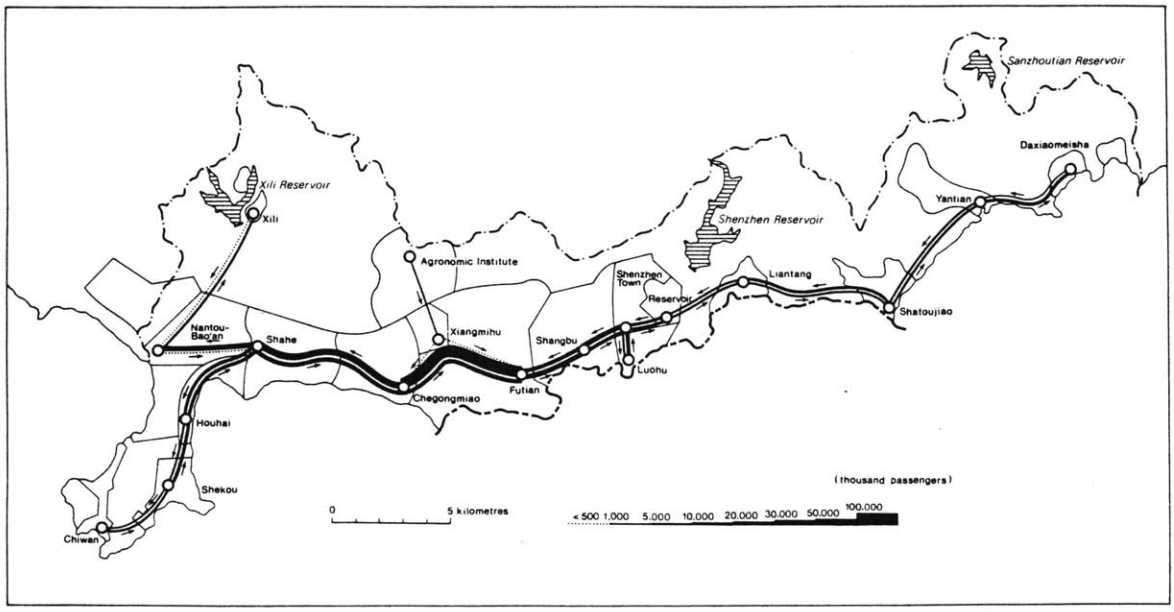
Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

Figure 25. The Population Distribution in the Shenzhen SEZ.



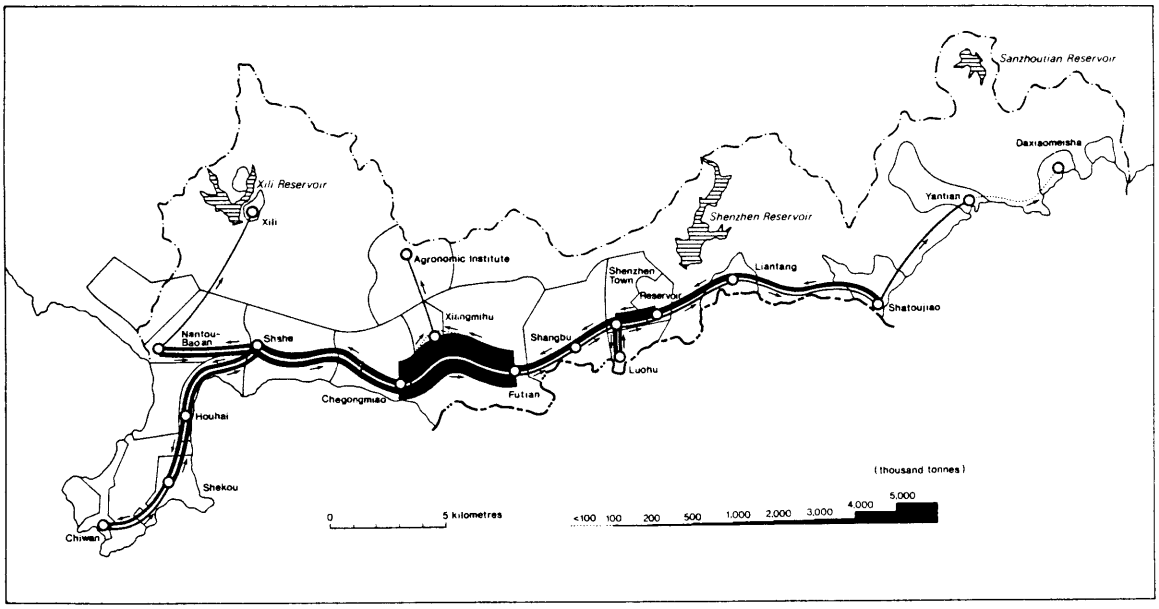
Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

Figure 26. Passenger Flows Among the Functional Districts of the Shenzhen SEZ.



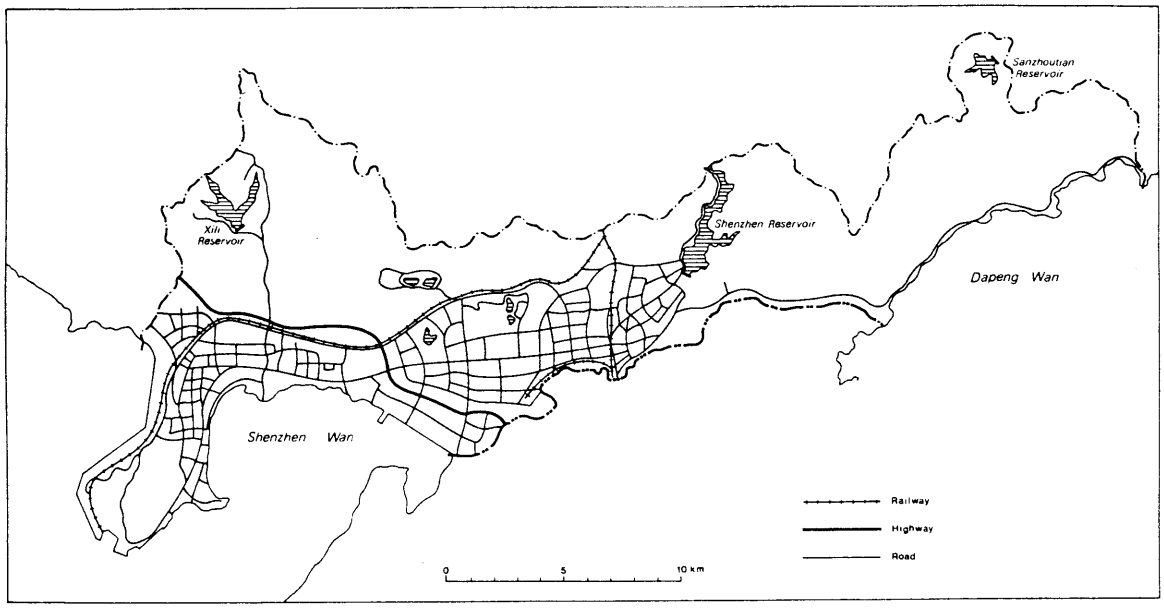
Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

Figure 27. Freight Flows Among the Functional Districts of the Shenzhen SEZ.



Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

Figure 28. Transportation Network of the Shenzhen SEZ.



Source: Kwan-yiu Wong and David K. Y. Chu, "Modernization in China".

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